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USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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USSR REPORT

CONSTRUCTION AND RELATED INDUSTRIES

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MISMANAGEMENT, WASTE OF CAPITAL INVESTMENTS NOTED

Baku VYSHKA in Russian 14 Feb 85 p 3

/Article by S. Sadykhov, manager of the Azerbaijan Republic office of USSR Stroybank: "A Client and a Plan", "Ordering Project Documentation Prematurely Is A Violation of Plan Discipline/Who Is Using Allocated Funds Inefficiently?" under the rubric: "Improving the Managerial Mechanism"/

/Text/ A plan is the foundation for a construction project and the planners, in finding optimum variants when preparing the necessary documentation, make a substantial contribution towards accelerating scientific-technical progress and towards the fund for savings in the use of financial, material and labor resources. In short, the project is dependent upon the plan: if the plan is well thought out on the basis of progressive solutions, then the products produced by the completed production operations will conform to the modern requirements and produce a profit.

It would appear that the planning organizations are close to the sources for scientific-technical progress. This explains the large requirements being imposed with regard to the work of the planners. They are on a par with the contractual collectives and clients and they are responsible for carrying out improvements in capital construction, commencing with the development of technical documentation and ending with the delivery of the completed project.

In 1983 the CPSU Central Committee and the USSR Council of Ministers adopted the decree entitled "Improvements in the Planning, Organization and Administration of Capital Construction," in which the principal directions to be followed for improving planning were set forth. Recently the Politburo of the CPSU Central Committee examined and approved the recommendations of the USSR Council of Ministers for further improving planning-estimates work and raising the role played by expert examinations and authors' supervision in construction.

The directive documents have one goal -- a radical change and reorganization of documentation preparation in keeping with the erection of installations. Of the vast range of questions available, we will touch upon here the role played by a client in the investment process, since the effectiveness of use of the resources released by the state is primarily dependent upon the client displaying high principles in the discharge of his duties.

Correct planning is first of all required from those clients who order plans. They must not issue tasks for the preparation of documentation, while fully aware that construction will not commence in the immediate future based upon

such documentation. They are also not authorized to request a new plan if a similar one is already available.

The availability of unused documentation is viewed as being mismanagement or a violation of planning discipline. This point is made in the decree of the CPSU Central Committee and USSR Council of Ministers entitled "Measures for Further Improving Planning-Estimates Work."

In order to ensure that this does not occur, the client is under an obligation, during the formation of the draft plans, to take into account the total amount of capital investments allocated annually for construction. But this is not all. A general contractor will build the project. Thus consideration must be given to whether or not he will include the new construction project in his plan and complete it within the normative period called for.

It should be emphasized that the clients have become more disciplined in recent years. Measures undertaken by the party and government have had a serious effect with regard to raising the role played by planning discipline -- the builders are applying themselves to their work in a more thoughtful manner. Over a period of 3 years, for the republic as a whole, the number of plans developed simultaneously decreased by 11 percent, or by 469 sets of documentation and even more striking changes took place in the case of projects of a production nature -- the reduction amounted to 38 percent or 618 plans.

However, we still are not able to state that complete order reigns in this work. Permit me to cite an example. On 1 January 1984, in Azerbaijan, the planning expenses for unfinished construction amounted to 75 million rubles and the cost for the documentation for projects placed in operation in 1983 -- only 17 million rubles, or 22 percent of the funds expended for planning. Unfinished construction absorbed the lion's share of these expenses.

Hence, intelligent planning which takes into account the above-mentioned conditions constitutes one means for reducing the amount of unfinished construction, as required in the decrees of the party and government. Economically unjustified expenditures for planning are the mark of a number of builders, among whom they increased on 1 January 1984 in the following amounts: Bakgorispolkom -- by 661,000 rubles or by 8 percent, Minneftekhimprom /Ministry of the Petroleum Refining and Petrochemical Industry/ -- 342,000 rubles or by 12 percent, Minvuz /Ministry of Higher and Secondary Specialized Education/ -- 99,000 rubles or by 14 percent and State Committee for Viniculture and Wine Making -- 930,000 rubles or by 17 percent.

These facts underscore the inefficient use of state money. Unfortunately, this worthless and condemned practice is continuing, despite the fact that the leaders of these departments are aware that a plan which is awaiting fulfillment for more than 2 years, according to USSR Gosstroy criteria, is considered to be obsolete and construction cannot be carried out based upon it. Such documentation must be examined repeatedly by the organs of state expertise and corrected on the basis of recommendations made by the latter. A new and practical evaluation for the plans and their corrections is required in order to ensure a high technical-economic level for future projects, an improvement in labor productivity and a reduction in resource expenditures for the erection and operation of enterprises, buildings and installations. This is an objective requirement for scientific-technical progress.

Unfortunately, a considerable number of the republic's clients have supplies of technical documentation for two or more annual plans, if one goes by the capital investment amounts allocated to them for construction. This includes first of all the state committees -- for professional-technical education, cinematography, physical culture and sport; ministries -- culture, public health, lumber and wood-working, light industry and others.

The most unfavorable situation developed in Minlegprom /Ministry of Light Industry/. A considerable amount of planning-estimates documentation was prepared for it but the capital investments allocated were not sufficient for carrying them out. Roughly 26 million rubles are released annually to it and plans have been developed for such large projects as a textile-knitted goods factory in Baku at a cost of 80 million rubles, a factory for non-fabric materials at Evlakh -- 30 million rubles and a painting-finishing factory in Mingechaur -- 36 million rubles. In all, technical documentation was prepared for the erection of seven large installations at an overall cost of 192 million rubles. At the rate for annual capital investments, in the amount of 26 million rubles, approximately 8 years will be required for the erection of these enterprises.

The question might well be asked: did it make sense to order the plans for constructing the mentioned factories? The answer is a simple one -- no, since they become obsolete considerably earlier than the commencement of construction. Whether we desire it or not, many thousands of rubles are expended in vain.

This type of builder, one which does not always display the proper degree of thrift in the use of state resources, also includes Minzhilkommunkhoz /Ministry of Housing and Municipal Services/ (it has documentation for 28 million rubles, that is, for three annual plans), Bakgorispolkom (61 million rubles and 2.5 annual plans), Ministry of Education, Ministry of Public Healther and so forth.

In the interest of preventing the preparation of excessive planning-estimates documentation and unacceptable growth in planning expenditures in the structure of unfinished construction, the institutes of Stroybank were forced to undertake financial measures. Thus, during the 1981-1984 period, the financing of expenditures in the amount of 10 million rubles for the development of 783 plans was not approved.

An analysis of the draft plan for 1985 planning also confirmed incidents involving premature planning for the preparation of new documentation, in the absence of coordination with the capital investments allocated and without taking into account the workloads of contractors from Minpromstroy /Ministry of Industrial Construction/, Azerbaydzhantransstroy, Azneftestroy, Baktonnelstroy and others. It was recommended that 1.3 million rubles worth of expenditures for the development of 89 plans be eliminated from such planning.

According to the situation on 1 January 1984, of the overall volume of planning expenditures associated with unfinished construction, 3.2 million rubles worth were defined by the clients as being worthless. The plans which had laid for some period of time on the builders' shelves had either become obsolete or there no longer was any need for carrying out construction based upon them.

The long periods of time required for the construction of some installations also inevitably lead to the formation of unnecessary expenditures and they force the clients into using a portion of the funds allocated for correcting them. One reason for the formation of unnecessary expenditures is the incorrect selection of the construction site or a decision concerning the withdrawal of a site. Thus, based upon construction passports issued by the Architectural-Planning Administration of Bakgorispolkom, Minzdrav /Ministry of Health/ and Minpros /Ministry of Education/ prepared planning-estimates documentation for the construction of installations in the region of Lake Ganly-Gel, the preparation of which required an expenditure of 55,000 rubles. However, the documentation turned out to be premature, since the region lacked proper engineering preparation.

The Kubatlinskiy Rayon Executive Committee handed down a decision calling for the allocation of a site for the construction of a 60-apartment dwelling in an undeveloped region where there were no communications or roads. The development of a plan for this building was turned down by the bank.

Who bears responsibility for the formation of such expenditures? Unfortunately, the clients are not held materially responsible for the squandering of state resources. Thus many of them continue to use all means for including projects in a contractual plan, assuming that in the presence of a plan it will be easier to obtain the resources needed for their construction.

Such practice, which causes harm to the state and complicates the work of the planners, must be eliminated. The time is at hand for the leaders of ministries and departments to undertake all of the measures required for ensuring that an intelligent and economic expenditures of state resources becomes the daily norm.

7026
CSO: 1821/005

MINISTRY OFFICIALS MEET TO REVIEW CAPITAL CONSTRUCTION GOALS

Moscow IZVESTIYA in Russian 16 Jan 85 p 3

[TASS Article: "Tasks of the Builders"]

/Text/ The Board of the USSR Ministry of Construction held an enlarged meeting on 14 January, during which a discussion took place on the operational results of the ministry for 1984 and on the tasks for carrying out the 1985 plan and for further improving capital construction, in light of the requirements of the party's central committee and the instructions and recommendations by the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet K.U. Chernenko.

A report was delivered by the USSR Minister of Construction G.A. Karavayev.

The work of the ministry and its territorial subunits was analyzed thoroughly during the course of this meeting. It was noted that despite the results achieved the ministry is still not operating at maximum capability and that it has serious shortcomings in the organization and administration of construction. Very weak use is being made of the large reserves that are available.

Specific methods were outlined for ensuring fulfillment of the 1985 plan and for rapidly correcting the operational shortcomings.

Attention was focused on the need for concentrating efforts on the more important construction projects and on organizing tense work at these projects commencing with the very first days of the year.

Emphasis was placed upon the importance of intensifying work concerned with improving the organization of construction production and control, introducing leading experience, raising the technical level of the branch, strengthening labor discipline and order, intensifying in every possible way the regime for realizing economies, retaining personnel and creating stable labor collectives and conditions for highly productive labor.

A speech was delivered during the meeting by Candidate Member of the Politburo of the CPSU Central Committee and Secretary of the CPSU Central Committee V.I. Dolgikh.

The head of the Construction Department of the CPSU Central Committee I.N. Dmitriyev and the leaders of a number of USSR ministries and departments participated in the work of the board.

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CONSTRUCTION PLANNING AND ECONOMICS

INVESTMENT STRATEGIES, COMPLETIONS IN CAPITAL CONSTRUCTION

Moscow FINANSY SSSR in Russian No 9, Sep 85 pp 24-27

[Article by K. Yu. Magelinskas, deputy manager of the Lithuanian Republic Office of USSR Stroybank [Bank for Financing Capital Investments], honored economist of the republic: "Economic Experiment in Capital Construction"]

[Text] Production associations (enterprises) subordinate to the LiSSR Ministry of Local Industry began operating in a new way in 1984 in accordance with the CPSU Central Committee and USSR Council of Ministers Decree "Additional Measures for Expanding the Rights of Production Associations (Enterprises) of Industry in Planning and Economic Activity and for Strengthening Their Responsibility for Work Results." Associations and enterprises of the electrical equipment industry on republic territory as well as other organizations of this industry also are conducting the experiment.

Extensive preparatory work was done in order to create preconditions for the successful work of enterprises under the new conditions. Measures were provided for improving planning, for technical improvement of production, for strengthening the incentive of labor collectives in a growth of production efficiency, and for strengthening cost accounting. The republic Ministry of Construction, Ministry of Rural Construction and Ministry of Local Industry were charged with taking necessary steps for unconditional fulfillment of the annual plans for capital construction on projects of local industry. The Ministry of Local Industry set up a commission for the preparation and implementation of the economic experiment and assigned persons responsible for fulfilling the measures. Associations and enterprises held party-economic aktivs and took a number of specific steps in preparing to work under the new conditions.

Responsible workers of the republic office and subordinate establishments of the USSR Stroybank were active in implementing preparatory measures. They made checks of preparation for the experiment in the Ministry of Local Industry and at enterprises both of local and of the electrical equipment industry. Because of this, the association and enterprise collectives successfully organized the work of industry and construction under the new conditions and achieved basically positive results, as attested by the following basic indicators of the Ministry of Local Industry's work for 1984[1] (see table).

1. Accounting data of LiSSR Ministry of Local Industry.

	Fulfilled for 1984, thousands of rubles	Percentage of Plan Fulfill-ment	In % of 1983
I. In Capital Investments			
Production construction:			
Introduction of fixed capital	11,127	104.2	116.2
Capital investments	11,534	100.0	127.4
Construction-installation work	3,499	100.4	131.4
Housing construction:			
Introduction of fixed capital	263	107.3	145.3
Capital investments	289	100.0	170.0
Construction-installation work	235	100.0	149.7
II. In Basic Activity			
Commodity products	266,664	101.8	105.3
Product sales	264,514	102.0	105.0
Product sales with consideration of contract obligations	181,330	100.0	104.0
Profit	32,812	110.2	109.6

The data provided indicate overfulfillment of planned basic indicators both in capital investments and in basic activity. They are significantly higher than indicators achieved in 1983, which graphically confirms the advantages of economic operation under conditions of the economic experiment. Enterprises of the electrical equipment industry also fulfilled the established quotas in basic activity, which exceed the 1983 level. Some enterprises in the sector, however, unfortunately permitted a certain lag in fulfilling planned goals in capital investments. It is also noteworthy that an increase in commodity product output in comparison with 1983 was achieved only as a result of production intensification factors.

Great emphasis is placed on fulfilling plans for the retooling and renovation of enterprises, as a result of which the plans of capital investments allocated for these purposes during the year were fulfilled at higher rates. For example, in the Ministry of Local Industry for nine months of 1984 the plan of capital projects for retooling and renovation was fulfilled 126 percent, and 123 percent of fixed capital was introduced, which is considerably higher than for the ministry as a whole. In case of a lag in fulfillment of capital construction plans for individual construction sites, the republic office of USSR Stroybank reports on this quarterly to the republic council of ministers for action to be taken.

Extensive preparatory work in financing and crediting capital investments was done in the bank's establishments in advance in order to promote successful implementation of the economic experiment. Special significance was attached to the study of guidance and regulatory documents concerning the planning, financing, crediting and settlements in capital construction. Persons were assigned in the republic office and branches to be responsible for the status of control and for prompt resolution of problems connected with financing, crediting and settlements. A procedure was introduced by which construction financing problems of enterprises are resolved in the bank's establishments in no more than three days, and often immediately. Questions concerning conduct of the economic experiment were discussed regularly by the board of the USSR Stroybank's republic office. Heads of the bank branches financing construction sites of the local and electrical equipment industry repeatedly took part in the discussion.

The bank carefully analyzes draft plans and capital work plans and makes suggestions for reducing the number of projects and increasing the degree of resource concentration. As a result the 1984 capital construction plan had no projects included which violated the norms for the length of their construction, and incomplete construction was only 24 percent at the end of the year with a norm of 30 percent. Seventy-four percent of capital investments allocated to the ministry for production construction was provided for retooling and renovation of enterprises.

It was recommended that enterprises operating under conditions of the experiment carry out measures with resources of the production development fund and other noncentralized sources, using their own resources as a rule. In cases where it is advisable to perform certain measures by the contract method, the plan specifies the necessary limits for this. In the planning of noncentralized capital investments in 1984, preference was given to the contract method of construction inasmuch as enterprises of local industry perform only 23 percent and those of the electrical equipment industry 32 percent of construction and installation work with their own resources.

The advance preparation and constant emphasis on matters dealing with conduct of the experiment permitted formalizing the financing of construction sites within prescribed time periods and supplying them with financial resources without interruption. There were no nonpayments to contracting organizations for work performed or to suppliers for equipment the entire time. The authorization to issue funds without quarterly limitations and the extensive granting of payment credits also promote an improvement in settlements in construction. The bank is authorized to grant construction associations (enterprises) of the local and electrical equipment industry credits above the limit of state capital investments for taking highly efficient measures in retooling fixed capital on condition of their recovery within a period of up to six years from the day the first loan is issued. Credit is repaid from resources of the production development fund and, if they are insufficient, from above-plan profit remaining at the disposal of enterprises.

Bank officials are performing explanatory work on preferential terms of granting such loans and on advantages of using them. More than one million rubles of long-term loans were issued for these purposes during 1984.

The measures being credited should provide a substantial effect according to the calculations submitted. For example, a long-term credit of R500,000 was formalized for the Kaunas Elektra Electromechanical Plant for improving the mechanical processing of the end shield of electric motors. Introduction of this measure will make it possible to obtain an annual economic effect of R121,000, free 11 workers, increase production culture and improve working conditions. In addition, the plant was issued R100,000 in long-term loans to carry out an especially effective measure: to place two fully mechanized electric motor assembly lines in production. The expenses for this measure are being repaid within a year and the number of workers is being cut by 50, which permits a noticeable improvement in labor productivity.

Measures taken as a result of bank loans at enterprises of the local industry for the production of wire, blow torches, milk cans and other articles are promoting a significant growth in labor productivity and reduced cost of manufactured products. But the enterprises are making little use of these credits for making manufactured products cheaper, improving their quality, reducing labor input and taking other actions to improve production even though it is common knowledge that the credits are being issued for performing capital work above the state plan. It is therefore necessary for the heads of enterprises working under the new conditions to make considerably wider use of these loans for implementing highly effective measures in retooling.

Along with the positive advances in industry and construction noticeable in the new organization of work, what are in our view certain deficiencies also have been found during this brief time period which are being felt above all in the experiment being conducted by enterprises of the local industry. The enterprises of this sector in the Lithuanian SSR are basically small. In 1984 they manufactured products worth R266.7 million (an average of R11.4 million for one enterprise). More than 75 percent of the manufactured articles are consumer goods of numerous descriptions.

Each year an average of some R100,000 per enterprise of the local industry are withheld for the production development fund. The assets of these funds are earmarked for financing measures only for enterprise retooling accomplished under the noncentralized capital investments plan. In addition, enterprises of the local industry establish funds for development of the local industry, used for financing outlays for retooling, renovation and expansion of existing enterprises, also accomplished at the expense of noncentralized capital investments. These funds average R58,000 per enterprise per year. Six percent of profit actually obtained is withheld to establish the funds. Like the production development funds, the accumulated local industry development funds are not subject to withdrawal [izyatiye].

The relatively small production development funds being established by small enterprises often do not permit necessary retooling measures to be taken within normative time periods. This can explain to a considerable extent the fact that in 1984 and in the 1985 draft plan enterprises of the local industry were to carry out only insignificant measures at the expense of the production development fund, measures basically involving regulation of warehousing, power and other subsidiary services. In addition, the availability to

enterprises of insignificant funds used for retooling gives rise to conditions for an increase in the number of projects simultaneously included in the plan, which leads to a dissipation of funds. For example, it is planned to use noncentralized capital investments in 1985 to expand the textile production shop of the Miniya People's Craft Articles Enterprise in the city of Plunge and the production base of the Kaunas Decorative [khudozhestvennyy] Articles Enterprise of the LiSSR Ministry of Local Industry.

Such projects are not subject to retooling and can be financed from the local industry development funds established by these enterprises. The estimated cost of each of these projects is around one million rubles and in accordance with the time norms they should be built during 1985-1986, for which approximately R500,000 of capital investments must be provided yearly. Unfortunately it is impossible to plan this way, inasmuch as these enterprises withhold only R200,000-300,000 each year to the local industry development funds.

In order to create conditions for performing the enterprise renovation and expansion work within normative time periods, the Ministry of Local Industry should be given the right, in necessary cases, to redistribute assets of the local industry development funds and to authorize enterprises to use their available production development fund resources for these purposes, although the measures to be carried out are not related to retooling. The use of long-term loans probably also should be authorized at the same time. In our opinion, the direction of assets of the production development fund for the renovation and expansion of local industry enterprises also is of great importance because a significant portion of the shops and production units are in unadapted spaces, which is why it is not always possible to carry out the work of retooling them.

Assets of the production development fund obtained in the current year above planned amounts determined based on the norms, as well as assets not used in the previous year can be used by enterprises to finance the expenses of retooling above the limits of state centralized and noncentralized capital investments. It is also authorized to direct these above-plan resources for overfulfilling the plan of work and expenditures for retooling prescribed by the state capital investments plan.

But enterprises of the local industry essentially are not taking advantage of such opportunities inasmuch as the above-plan resources of production development funds are so insignificant that there are not enough for carrying out even minor retooling measures. The remainders of these assets as of the beginning of 1984 averaged R24,000 per enterprise, and above-plan accumulations for the first half of 1984 were only R6,000. There also was practically not one instance where the enterprises directed those above-plan resources for financing of work and expenditures prescribed in the state capital investments plan.

More favorable conditions for the rational use of above-plan assets of the production development fund for the technical improvement of production will be provided by granting the enterprises the right to use such assets for carrying out highly effective measures of retooling fixed capital together with long-term loans issued and paid off in the established manner. In determining time

periods for repayment (or effectiveness) of measures being taken at the expense of two sources, we should take into account not only the bank loans, but also the above-plan resources of the production development funds being used at the same time.

The proportion of products of local industry enterprises manufactured in 1984 using byproducts and local raw materials is only nine percent. It therefore makes sense to provide for effective measures permitting enterprises to be given an incentive to expand the production of such products. Above all, the enterprises which have not been allocated centralized or noncentralized state capital investments for this purpose must be authorized to carry out measures for retooling, reconstruction, expansion or construction of new shops and sectors for the manufacture of products using byproducts and local raw materials above the established plan, using noncentralized resources for this purpose. In cases where there are not enough accumulated resources of the production development fund, consumption fund and local industry development fund (for local industry) for those measures, long-term loans should be issued. It is also necessary to authorize the application of higher coefficients for the estimated cost of this construction, to issue its participants higher bonuses for introduction, to establish advance payment of bonuses and to apply other benefits prescribed in Paragraph 39 of the CPSU Central Committee and USSR Council of Ministers Decree of 12 July 1979.

The production of commodities using byproducts requires greater labor input than the manufacture of the very same item from high-grade raw materials. It stands to reason that this complicates the fulfillment of tasks to improve labor productivity. To avoid the negative influence of this factor on results of activity, we must alter the procedure for planning labor productivity and for reflecting it in accounting at the enterprises manufacturing commodities using byproducts. There should have been consideration of the question of increasing the amount of bonuses paid to workers for overfulfilling planned goals for the manufacture of commodities using byproducts.

Both centralized capital investments financed from the state budget and other centralized sources, as well as noncentralized capital investments, financing of which comes from resources of the fund for social-cultural measures and housing construction, can be planned for the housing construction of production associations and enterprises working under terms of the economic experiment. In 1984 local industry enterprises were allocated only noncentralized capital investments for housing construction, financing of which came from the resources of those funds. It is planned to accomplish housing construction in 1985 as well from those same sources. Such planning of housing construction creates conditions for increasing the incentive of labor collectives in achieving end results of the enterprises' work. Unfortunately, primarily centralized capital investments are planned for housing construction for enterprises of the electrical equipment industry, which cannot be deemed acceptable.

Housing construction should be planned as a rule at the expense of noncentralized capital investments in order to improve the incentives of enterprise collectives working under terms of the economic experiment in results of their work and to strengthen the stimulating significance of the fund for

social-cultural measures and housing construction. In addition, it is our opinion that it is advisable to authorize them to build housing with their own resources above the limits of state capital investments at the expense of available resources of that fund and, if it is insufficient, to issue loans on the very same terms as in constructing housing under the plan of noncentralized capital investments.

A study of the state of affairs in capital construction indicates that contracting organizations have no economic incentive to better organize the work done at projects of the local and electrical equipment industry. Therefore we have to ponder how to strengthen their incentive in results of the work at projects of clients who are carrying out the experiment and to strengthen responsibility for fulfilling the planned goals in construction.

In our view the following can be motivating factors for contractors: authorization of advance payment of bonuses; an increase in bonuses for placing production capacities and projects in operation; a transfer of some of the profits received as a result of a reduction in the normative periods of construction, and so on. The establishment of a procedure by which contracting organizations which do not fulfill annual plans of construction and installation work would pay the client a penalty and would pay a fine of increased amounts in comparison with those prescribed in the Statute on Contract Agreements for violating construction periods would promote an increase in responsibility.

6904
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CONSTRUCTION PLANNING AND ECONOMICS

BRIEFS

1985 CAPITAL INVESTMENT--The volume of capital investment in the Soviet economy has been growing during the current five-year plan and will constitute 175 billion rubles for 1985, according to an article on the organization of accounting in construction published in Moscow DENGI I KREDIT in Russian No 9, September 1985 pages 12-20. The value of the economy's basic production funds is reported to have exceeded 1.6 trillion rubles. [Editorial Report]

CSO: 1821/79

INDUSTRIAL CONSTRUCTION

EXPERIMENT WITH TURNKEY PROJECTS STRESSES ACCOUNTABILITY

Moscow KHOZYAYSTVO I PRAVO in Russian No 8, Aug 85 pp 28-33

[Article by M. Davydenko, chairman of the board of the Krasnodar Kray Interkolkhoz Construction Association, and free-lance correspondent M. Martynov (Stavropol): "Search in Two Directions"]

[Text] On 1 January 1982 the interkolkhoz construction organizations of Krasnodar and Stavropol krays and of Kuybyshev Oblast made the transition, as part of an experiment, to comprehensive project planning and construction with the surrender of completed enterprises and facilities to the client "ready for the turn of the key." A provisional statute and terms regulating the relations of project participants were drawn up by Roskolkhozstroyobyedineniye [RSFSR Interkolkhoz Construction Association] and approved by the union Gosbank, Minselkhoz [Ministry of Agriculture], Minfin [Ministry of Finance] and Gosstroy and by the RSFSR Goskomselkhoztekhnika [State Committee for the Supply of Production Equipment for Agriculture].

The aim of the experiment is the completion of projects and facilities "ready for the turn of the key" on schedule and with construction work of high quality. To this end, the general contractor assumes all of the functions of the client, from project planning to the surrender of projects. With the transition to this construction method, Gosbank credit allocated for unfinished construction takes the place of advance payments from clients.

In this way, in the opinion of the organizers of the experiment, a more solid foundation can be laid in interkolkhoz construction for better planning, design, operational management, construction quality and the incorporation of the achievements of scientific and technical progress.

It has been more than 3 years since the beginning of the experiment. This is long enough to judge the results of the new method. What are they?

The answer is in the reports published below, which the editors received from Krasnodar and Stavropol krays.

Not to the Last Turn of the "Key"

In terms of the stages of the introduction of the experiment in the Krasnodar Kray kolkhozstroyobyedineniye [interkolkhoz construction association], 1982 was the year of the careful drafting and clarification of the provisional statute on "turnkey" projects, of teaching this method to project planners and the workers of trusts and interkolkhoz construction organizations and of revealing and eliminating bottlenecks. In other words, it was a year of trial steps. Nevertheless, they produced positive results.

By 1983-1984, general contracting agreements had been concluded with the clients for the entire program of construction and installation operations, and unfinished construction and installation work was completely credited by Gosbank. This improved the financial position of association construction organizations to some extent.

Certain steps were also taken by two of our project planning institutes (Kraykolkhozproyekt and Adygkolkhozproyekt). In particular, they assumed more responsibility to the clients--the interkolkhoz construction organizations--for the timely and complete issuance of technical documents and for the quality of surveying, and the project planning period was shortened. Now the main planning estimates are sent to the production sphere instead of lying around on shelves as they did before.

Nevertheless, we must admit that the organizations of the association, for reasons beyond their control, have not completed the transition to the "turnkey" method.

During the first year of work according to the new method, it became obvious that construction organizations had made this change without the necessary advance preparations. In particular, Roskolkhozstroyobyedineniye's provisional statute and instructions on the contract relations between clients and general-contractor construction organizations were flawed and sometimes contradictory. Furthermore, there are still no statutes precisely regulating the relations between the general contractor and the organizations responsible for project planning, subcontracting, assembly and start-up operations. No instructions have been issued with regard to the procedure by which construction projects are outfitted through the general contractor with technological, power engineering and specialized equipment, cable, furniture and other material and technical resources supplied by the client and the organizations of USSR Gossnab, Goskomselkhoztekhnika and other ministries and departments.

For example, for all of last year the association experienced serious difficulties as a result of disparities between plans for contracted work and allocated material and technical resources. Annual shortages of steel, asbestos cement pipe, slate, petrobitumen, linoleum, tanks, fasteners, conduits and other items ranged from 40 to 60 percent.

The statute on the comprehensive project planning and construction of facilities with their "turnkey" surrender to the client, approved by USSR Gosplan, USSR Gosstroy, USSR Goskomtrud [State Committee for Labor and Social Problems], USSR Minfin and USSR Stroybank on 12 November 1984, precisely regulates the rights, obligations and responsibilities of several union and Belorussian construction ministries and Glavzapstroy [Main Administration of Construction in Western Regions] as the general contractor, and those of subcontracting organizations and the client for the timely completion of projects and incorporation of capacities. The rights of these ministries in conducting the experiment were simultaneously expanded considerably.

Unfortunately, the mutual responsibility of all project participants is still not stipulated in the provisional statute drawn up and ratified by Roskolkhozstroyobyedineniye. There are, of course, economic sanctions for violations of contracts, but they still have little impact, and sometimes it takes a long time to collect damages from the parties to blame.

All of this ultimately signifies substantial outlays and keeps rural builders from completing all of their work on schedule and according to the necessary standards and from incorporating capacities and projects on schedule or ahead of schedule.

Considering the fact that normative documents have not solved all problems, the kray kolkhozstroyobyedineniye took a number of measures in conjunction with the agricultural production administration of the ispolkom of the Krasnodar Kray Soviet of People's Deputies and the kray Gosbank office to clarify the "turnkey" operations of construction organizations.

In particular, provisional instructions were drawn up on the procedure of concluding contracts, general contracts and supplementary agreements, and seminars were held for clients and workers of rayon Gosbank branches. Recommendations on the procedure of the coordination, clarification and ratification of project plans were also drawn up in conjunction with the kray agricultural production administration and, besides this, the long-range project plan for construction on kray kolkhozes was ratified for the 1983-1985 period.

Nevertheless, unresolved problems still remain. For example, project planning institutes are still unable to receive full payment for surveying work and planning estimates from general-contractor construction organizations, which have responded with objections: "Why and how are we to pay interest on bank loans before we even know whether or not the projects for which you are issuing documents will be included in the plan?"

It would be better for the clients--kolkhozes, sovkhozes or OKS [capital construction departments] of agricultural production administrations--to pay project planning institutes for planning estimates. When the project is included in the plan, the general contractor can use Gosbank credit to reimburse the client for the cost of the documents.

There is another equally important problem. Credit sources are still kolkhoz funds, both personal and borrowed. This means that interest is charged twice

on long-term loans: The interkolkhoz construction organizations pay 0.75 percent per annum when long-term loans are extended directly to farms, and another 0.5 percent is charged on the same funds when a short-term loan is extended for unfinished construction.

This results in substantial additional monetary expenditures for interkolkhoz construction organizations. Furthermore, the financial status of construction organizations will be aggravated even more when they begin receiving credit for surveys, estimates, equipment, start-up operations and the comprehensive testing of equipment.

What must we do to secure the effective work of interkolkhoz construction organizations under these new conditions?

First of all, legislation must be drafted to extend the statute on "turnkey" projects to all participants in the construction process, simultaneously heightening their financial responsibility for the timely incorporation of capacities; secondly, ways of compensating construction organizations for interest payments on bank credit must be found; thirdly, the delivery of technological equipment and special materials to construction sites and the payment for them should remain the client's responsibility, as the general contractor does not have the necessary specialists to perform all of this work; fourthly, the general contractor should be authorized to make independent decisions on his own construction and installation work and on maximum expenditures per ruble of construction and installation work, to approve the time schedules of subordinate trusts and maximum allocations for the maintenance of the administrative staff, and so forth. Some of our suggestions are envisaged in the statute on "turnkey" projects ratified by USSR Gosplan, USSR Gosstroy, USSR Goskomtrud, USSR Minfin and USSR Stroybank on 12 November 1984 for state construction organizations.

Work according to the new method has demonstrated many advantages over the traditional method. During this time, rural builders have learned much and feel that the transition to "turnkey" projects will heighten the effectiveness of construction even more. Now we can only hope for the continued improvement of this method.

Rules with Defects

A stern letter addressed to G. Nemerovchenko, chairman of the board of the Stavropol Kray kolkhozstroyobyedineniye, arrived from the kray office of USSR Gosbank. In five pages of small type, the deputy administrator of the office, I. Zavalishin, listed all of the errors and omissions in the economic and financial activities of association subdivisions. In particular, he stressed that many interkolkhoz mobile mechanized columns (MPMK's) have begun to work less efficiently, the number of those failing to keep up with assignments has risen from 15 to 29, and non-payments on bank loans have increased. The volume of unfinished construction has remained the same. There has been no significant reduction in the number of ongoing projects or the duration of construction work.

"And the reason for this," said Chairman of the Board G. Titarenko of the Stavropol Kray organization in charge of the experiment, "is that the necessary conditions have not been established, many important aspects of economic activity have not been taken into account, and several organizational problems have not been solved. In general, advance preparations were not of the best caliber, and this has primarily affected the economic affairs of our subdivisions."

Indeed, the economic status of many MPMK's is much worse than it was before. Let us take the Novoaleksandrovskaya mechanized column as an example. It was once one of the best in the association: It regularly fulfilled plans and earned a profit.

"Now we owe millions of rubles. We are trapped by a peculiar credit system," complained its chief engineer, A. Morozov. "We have no funds to pay for materials and structures or for transport services. But this is not the most important thing. Sometimes we cannot even pay wages and have to ask the association for help, because the bank refuses to give us credit...."

In short, the MPMK has become an insolvent debtor, although the collective's work has not deteriorated. It completes projects and it meets "gross" indicators. The paradox stems exclusively from defects in the organization and standard procedures of the experiment.

The fact is that the financial status and, consequently, the economic position of the contractor depend completely on those for whom the facilities are being built. The actual workings of this process were described by the same A. Morozov:

"At the end of each month, and especially at the end of the quarter, the chief bookkeeper, economists, other specialists and I visit all of our clients and ask them for money. Some make promises, others complain about their lack of money, and still others refuse outright. We have to ask for help from the party raykom, the rayispolkom and the RAPO [rayon agroindustrial association] council. But even this does not always help us."

This sounded odd, to say the least. What do clients have to do with this? After all, construction is now financed by bank credit, which has taken the place of client advances. Complete the project and get paid. Everything is as clear and simple as it can be.

Yes, it would be, if the USSR Gosbank Board had not established an extraordinary procedure for the crediting of contracting organizations. The fact is that loans are extended to builders only if clients have deposited the necessary funds in special account No 732 in advance. The funds in this account must be secured by the clients and...by the contractors. The "special terms" signed by Chief L. Kutyavin of the administration for the crediting and financing of interfarm enterprises (or organizations) of the USSR Gosbank Board stipulate the following: "The failure of clients, agricultural agencies and interkolkhoz construction organizations to take measures to secure the funds...can be grounds for the cessation of the crediting of contracting organizations."

These grounds are employed quite frequently by bank personnel on the local level. For example, the Novoaleksandrovskaya MPMK was on the verge of financial ruin solely due to the undisciplined behavior of its clients. In the letter with which we began this account, Deputy Administrator of the kray Gosbank office I. Zavalishin warns association managers: "Contracting organizations will be penalized for failing to secure the deposit of funds in account No 732." And the bank penalizes organizations by denying their credit applications. This is why builders have to beg for hand-outs.

Other aspects of the experiment are also hindered by flaws in legal documents. For example, by a decision of Roskolkhozstroyobyedineniye and the RSFSR Minselkhoz, the project planning of high-voltage power transmission lines (of over 10,000 volts), gas supply lines, communication systems and fire alarms must be performed by specialized organizations of the appropriate ministries and departments. But neither clients nor the Kraykolkhozproyekt Institute have payment ceilings for this kind of work. Procedural documents do not even explain how and where these expenditures should be recorded, because there is no indication of who should install these systems on construction sites. This kind of work represents a negligible portion of estimates and is considered to be trivial. But these are precisely the trivia without which no facility can operate. Indeed, would it be possible, for instance, for an animal husbandry farm to get along without electricity? Or without gas for the boiler room? Without communication equipment? Their design and construction require specialists, whom neither the Kraykolkhozproyekt Institute nor the association has. When the statute on the experiment was being drafted, however, this fact seems to have been forgotten completely in Roskolkhozstroyobyedineniye.

These shortcomings are compounded by flaws in the planning of capital construction. Specialists believe that successful work under the conditions of this experiment will require, above all, stable plans for at least 2 or 3 years, and for 5 years if possible. Furthermore, these plans should envisage not only volumes of capital investments to be utilized (these figures already exist), but a list of specific projects with locations and deadlines. This kind of list has only been drawn up for cultural and consumer construction projects, and plans for production facilities and housing do not provide a clear look even a year into the future. Lists of new projects are not coordinated until the middle of March. Even after builders have received them, they cannot be certain that these are the final lists, as they are often corrected afterwards. But after all, the acquisition of these lists is only the beginning of preparatory work. The contractor must also arrange for financing and distribute orders for equipment, structures, cable and so forth. And when is the facility to be built and completed?

It is understandable that this kind of planning deprives the builder of the chance to organize the work carefully and intelligently and arrange for the necessary engineering groundwork. All of this leads to unproductive expenditures, delays in the work and, as a result, the payment of higher interest on loans. Last year this cost the association around 300,000 rubles.

It is possible, however, that the collective of the Kraykolkhozproyekt Institute suffers the most from the planning reversals. For example, last year

52 projects were excluded from construction plans, 46 were carried over to subsequent years, and 70 were added to plans. Furthermore, no one pays for designs excluded from the plan, and their total cost exceeded 200,000 rubles. This is essentially nothing other than a waste of time, which puts a heavy burden on institute economic affairs and leads to the overexpenditure of the wage fund and other unpleasant consequences for the collective.

But this is not the only difficulty, said institute Chief Engineer A. Pankov. "Our work is also complicated by the many omissions, indefinite statements and contradictions in the legal documents of the experiment. It is as if a game has been invented, but there is only a rough draft of the rules."

It is true that the work under the new conditions is similar to a game without rules in many respects. For example, in accordance with its status, the Kraykolkhozproyekt Institute is not authorized to survey construction sites exceeding 10 hectares. This work must be subcontracted to specialized organizations--construction engineering and surveying trusts (TISIZ's). The institute cannot commission a survey from a TISIZ, however, because it has no payment ceilings for subcontracted work.

In general, we must admit that the organizers of the experiment overlooked a great deal. As we mentioned before, contractors are assigned the functions of clients in project planning, financing and the provision of construction sites with equipment. This work is time-consuming, difficult and tedious: At least half of the administrative personnel of the capital construction divisions of RAPO's and farms have been "preoccupied" with this work. When these functions were transferred to builders, however, no one from Roskolkhozstroyobyedineniye and the RSFSR Minselkhoz took the trouble to transfer personnel to the MPMK's. Their mistake soon became apparent--mechanized column staffs cannot cope with the heavier workload and cannot keep up with the work schedule when they write up contracts and orders, supervise their fulfillment, check incoming equipment and so forth. It is true that they tried to correct this mistake after two and a half years by adding a single staff position to each MPMK, but this was no more than half a solution. The complete resolution of the problem will require the establishment of special divisions in mechanized columns by reducing the order staff of OKS's, whose workload has decreased.

No progress has been made in the resolution of another related problem. Now that contractors order and receive equipment, its storage is presenting problems. The builders need warehouses and personnel, but they have neither. It would be logical to transfer the bases and staffs of clients to the builders' jurisdiction, but this has not been done to date, and the MPMK is consequently unable to guarantee the safekeeping of incoming equipment.

The list of shortcomings in the organization of the experiment could go on, but we would like to concentrate on its inadequate legal basis. This applies to documents regulating the relations of participants and establishing their responsibilities to one another. The need for this is more than obvious. For example, a mechanized column might order technical documents from Kraykolkhozproyekt and then refuse to pay for them because this project has been excluded from the plan. The institute incurs heavy losses and it cannot take action against its partners. This is not envisaged in the provisional

statute on the experiment. Conflicts differ, but their results are the same: irresponsibility strains a partnership and encourages negligence. This has an adverse effect on contract discipline and on final results.

Of course, not everything is foreseeable. But this is the purpose of the experiment, to test the new method and to perfect various aspects of economic activity, including legal standards. Experience has shown that delays are impermissible. It will be necessary to study the results of the experiment more quickly and thoroughly, learn lessons and draw accurate conclusions from them, respond more quickly to negative developments, make the necessary corrections in administrative documents, and display more initiative in the use of the new forms and methods of organizing production and economical work.

In short, every effort must be made for the fuller disclosure of the indisputable advantages of the new method of economic management.

> We have described the state of affairs in two of the three interkolkhoz construction organizations experimenting with "turnkey" projects. We have also had reports on the third, the Kuybyshev Oblast kolkhozstroyobyedineniye.
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> "When the experiment began, we encountered the same difficulties," Chairman of the Board I. Tsarev of the association told us. "The idea itself was wonderful. And if the barriers revealed during the course of the experiment can be removed, the operational efficiency of organizations using the new system will be enhanced even more perceptibly."
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> This is also attested to by the results of the association's work in 1984: the early fulfillment of the plan in terms of the main technical and economic indicators and the overfulfillment of assignments for commercial construction, housing, cultural, consumer and production facilities....
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> As the reports above testify, however, several shortcomings in the work on the "turnkey" project experiment are connected with the organization of the experiment itself and the inadequacy of legal regulations. This is pointed out by the authors of the reports published in the journal and by the chairman of the board of the Kuybyshev Oblast kolkhozstroyobyedineniye.
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> As we know, the state construction organizations of several union and republic ministries will also begin experimenting with "turnkey" projects this year. A statute has been drawn up on the use of this construction method in the nature of an experiment. It specifically regulates planning, design, financing, material and technical supply operations and the incentives and responsibilities of participants in the experiment. Decree No 387 of the CPSU Central Committee and USSR Council of Ministers "On the Better Planning,

Organization and Management of Capital Construction" of 29 April 1984, the decree of the USSR Council of Ministers and AUCCTU "On Improvements in the Organization of Labor, Wages and Incentives in Construction" of 24 January 1985, Decree No 96 of the USSR Council of Ministers "On the Further Improvement of Planning Estimates and the More Extensive Use of Appraisals and Inspections in Construction" of 28 January 1985, the abovementioned statute on the experiment in "turnkey" projects by state construction organizations and other normative acts already provide for the more precise definition of the responsibilities of partners in all matters connected with the experiment in interkolkhoz construction organizations as well.

The use of this experience in rural construction and the "turnkey" system will open up, as we can see from the reports published above, new possibilities for the widespread display of initiative and economic independence and will aid in the search for better forms of labor organization and the introduction of the achievements of scientific and technical progress.

The different approaches to the experiment in state and interkolkhoz construction organizations stem largely from different forms of ownership. In spite of this, both are working toward the same goal--the heightened efficiency of construction. Their mutual enrichment can only hasten the attainment of this goal. It appears that Roskolkhozstroyobyedineniye, which drew up the provisional statute on the experiment, should supplement it with measures to solve problems arising during the work under the new conditions of economic management.

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INDUSTRIAL CONSTRUCTION

MIXED RESULTS FOR INDUSTRIAL CONSTRUCTION IN AZERBAIJAN

Baku VYSHKA in Russian 24 Jul 85 p 2

[Article by A. Gamedov: "The Main Thing is Combined Efforts: Work Results for the Ministry of Industrial Construction, Ministry of Rural Construction and Ministry of Installation and Special Construction Work for the First Half of the Year"]

[Text] Our construction workers have written many good pages in the book on the 11th Five-Year Plan. For example, in a short period they transformed the swampy area to the south of the Machine Building Plant imeni B. Sardarov in Baku. Today we see the first sections of a block of shops intended for the production of oil field, drilling and geological exploration equipment and spare parts. The project site is large and cannot be surveyed in one glance. By 25 December almost 10 million rubles worth of fixed capital should be put into operation.

This project is one of first order importance to the state. The plans here were not fulfilled for five months. Minpromstroy [Ministry of Industrial Construction], its general contract trust No. 4, and the work implementor SU-49 [Construction Administration-49] were sharply criticized for their unsatisfactory work at a meeting of the Azerbaijan Communist Party Central Committee Buro.

After this criticism there were vivid changes at the project, the supply of construction materials and ferroconcrete structures was brought in order. In June 84,000 rubles of above plan construction-installation work was completed. This covered the backlog and the builders were on plan for the first six months of the year.

However, there are again troubling symptoms. During the last 10 days in June there were 180 people working on this project's first shift and 60 working on the second. For a little while there were only a few people working on a start-up complex.

The Minmontazhspetsstroy [Ministry of Installation and Special Construction Work] board has also raised questions about the Plant imeni Sardarov. Installation workers are concerned that, due to the general contractor's fault, construction work is not ready for installing utility lines. Things are hardly in order in monetary terms: 343,000 of 616,000 rubles have been used,

however not a single component has been completed and delivered to the working commission.

As a whole, subcontractors prepared for close collaboration with general contractors successfully get projects ready. This is true, for example, at the installation of new capacity at the Machine Building Plant imeni Lt. Schmidt, the deep water foundation plant, the Dashsalakhlinskiy bentonite clay mine in Kazakhskiy, the mineral fertilizer storage facility at Bashbashi Station, the Lindane [hexachlorocyclohexane insecticide] production unit in Sumgait, the floor coating shop for Gossnab [State Supply Committee], the wholesale warehouse for Tsentrosoyuz [Central Union of Consumer Cooperatives] and others. All these projects were completed and transferred to the clients by state commission acts. To the list of projects completed by Minpromstroy units one should add two schools, in Nakhichevani and Mingechaur, for 1,276 students each, and 98,700 square meters of housing.

The operational introduction of production units and capacity, housing and social, cultural and service facilities is the main prerequisite for fulfilling the commercial construction plan. This indicator was 105.3 percent fulfilled for the first half of the year.

However, this does not mean that all the intended projects have been delivered. In spite of repeated assurances by R. Israelyan, manager of the Stepanakertskiy Trust No. 9, the Askeranskiy Petroleum Base has not been put into operation. As you know,this project should have gone into operation last year.

Neither is S. Allekhverdov, chief of the Baku Trust No. 4, fulfilling his promises. He has acquired many "arrears" the building for the Special Design Office for the the residential air conditioner plant, service facilities [bytovki] for the Elektrotsentrolit Plant, a BMU [not further identified] production base for Energomontazh [Power Engineering Installation], a sewing shop for local industry in Sabunchi, etc.

These trusts have failed to fulfill almost all indicators for the half year, and a fourth trust has also done worse than last year: 7 of 8 administrations did not fulfill their plans. The Trust No. 3 in Kirovobad, the No. 8 in Baku, the DSK [Housing Construction Combine]-3 and the Spetspromstroymontazh [Special Industrial Construction Installation] trust did not meet their contract work plans. The majority of units in these administrations did not get beyond their target levels.

The lowest results were those of DSK-3, the weakest link in Minpromstroy. Not having a chief for a long time has obviously had an effect.

Among the best the first to mention is the Trust No. 5 in Nakhichevan, where A. Abdullayev is the chief. Here they are able to concentrate the work force and material resources upon startup projects. The trust fulfilled the plan for general contract work and for that using its own resources. Judging by the indicators, Trust No. 7, led by K. Kasimov, stabilized work and overfulfilled the half year plan.

Minpromstroy has 32 projects on its list of especially important ones. In general, the plan for them has been fulfilled, 61 percent of the year's work has been completed, something which must be considered an achievement. However, at many projects the situation continues to remain unfavorable. These include the installation for producing electrode coke at the Novobaku Oil Refinery imeni V. I. Lenin, the Kishlinskiy machine building plant, the Azerbaijan Pipe and Rolled Metal Plant imeni V. I. Lenin, the Second Housing Construction Combine, the Baku sewerage plant and others. On these projects there is still no businesslike mutual understanding between clients, builders and installation workers.

The builders have many of their own oversights and delays. Their shortcomings are also intensified by the unsatisfactory haulage of construction materials from quarries. At the beginning of June, "rotary" dump cars at the Sangachalskiy quarry stood idle for a week and a half. The situation has reached a state where each plant in the Zhelezobeton Trust stands idle from 2 to 5 days a month because of shortages of aggregate.

The haulage of gravel from the Mingechaur plant and the Bagramtapinskiy quarry is going poorly. As previously, gravel quality is cause for customer concern and freight cars are still dispatched half loaded. As a rule, there is less freight in them than noted in the waybills. The managers of two departments -- the Azerbaijan Railway Line Administration and Minpromstroymaterialov [Ministry of the Construction Materials Industry] have not been at all able to bring enough order into the situation so as to eliminate write ups.

Minselstroy [Ministry of Rural Construction] is firmly holding on to the positions it has gained and is adding to its achievements. The sector overfulfilled its general contract work volume by 1.5 percent, reaching a growth rate of 9.2 percent. The builders have done even better on construction work using their own resources, the growth rate here is 13.4 percent. The commercial construction plan was 140 percent fulfilled.

They have a list of 164 startup projects, on which 63.7 percent of the annual plan has been completed. Thus, they have made a good step towards fully completing the annual startup plan.

These projects include 17 on the list of especially important ones. Among these are the Siazanskaya poultry factory, the dairy plant in Saatly, the flour combine in Agdame and the interrayon base at the Olkhovka Station. They have all been put into operation. Also, during the report period, rural builders delivered 49,300 square meters of housing, schools for 6,968 students and kindergartens and hospitals.

However, not all Minselstroy are working equally well. Four out of 8 trusts have not completed their plans: Khachmasskiy, the Baku No. 2, Mingechaur No. 5, and Kazakhskiy No. 7. For a long time Trust No. 7 has not been able to

stand on its own legs, although an administration for production-technological outfitting has been set up for it in order to improve the supply of all needed items to projects.

Minmontazhspetstroy is the republic's main subcontracting organization. It has fulfilled the plans for the first half of the year and completed the required volume of installation operations at Minpromstroy and Minselstroy projects. Installers are working well at startup projects, having fulfilled 57 percent of the annual plan.

However, let us turn again to the Plant imeni B. Sardarov. Its example most completely shows our builders' tactics and the existing practice for completing quarterly and half year plans. This tactic includes the heaping [naval] method. Minpromstroy managers did not paid any attention to this project. After they were criticized they heaped great efforts upon it; brigades started working in two shifts.

Contractors also have another method, rounding up figures so that by the end of a quarter or half, things look good. In such cases they intend to complete the work in the "rounding" in the next calendar period. This happened at the Azerelektrosvet [Azerbaijan Electric Light] Plant, which Trust No. 4 promised to introduce in the fourth quarter. According to the trust's indicators, the plant was actually ready for operations. However, it turned out that there was a big difference between the rounded up indicators in monetary terms and the actual state of the project. Because of this, the capacity at the Azerelektrosvet Plant did not go into operation at the time promised.

What is the purpose of these examples? It is so that nothing similar will take place at the Plant imeni B. Sardarov. According to the half year indicators the project is finished, but the required level of construction completion has not been reached. In spite of this, in July, as we have already related, it again became quiet at the site. How long will this last? Probably until the next "heaping", but then other projects will be stripped.

Contractors know better than anybody that the method of rush work at the end of a period has a ruinous effect upon construction quality and later on the operation of production capacity.

As has already been said, in the first half of the year, contracting ministries completed more than 50 percent of construction and installation work. So, there will be less left to do in the next period. However, there is no consolation in this. After all, we are not talking simply about the completion of work plans, but about delivery preparations for a large number of projects. These are far from the same. Indicators in the form of resources utilized, expressed in rubles, which we now use to judge the state of projects look better than their actual state.

As a rule, this is all revealed in the period before startup. It is now important, while realistically evaluating the situation to work more intensively and strengthen mutual requirements. The difficulties will be on a nationwide scale, as was noted at the April (1985) Plenum and at CPSU Central

Committee conference on questions concerning the acceleration of scientific and technical progress. Nevertheless the question posed is: the annual plan should be completed.

The need to mobilize the efforts of construction and installation organizations and client enterprises towards the unconditional operational introduction of planned projects was stressed at a meeting of Azerbaijan party and economic activists which examined the results of the CPSU Central Committee conference and the tasks of republic party organizations.

Practically all construction and installation collectives have large reserves for introducing projects on time. These are: two shift work, the complete utilization of machinery, the dissemination of progressive work methods, smoothly operating engineering-technical support and the expanded activities of working commissions headed by client representitives. Militant competition under the slogan "A Workers' Relay Race" unified the efforts of partners at construction sites.

Contractors have to introduce hundreds of projects in the second half of the year. There is increasingly active preparation for honorable celebrating the 27th CPSU Congress and the 31st Congress of the Azerbaijan Communist Party. Labor collectives in Azerbaijan, similarly to builders in Moscow, Leningrad and a number of union and autonomous republics, krays and oblasts, have become initiators in the CPSU Central Committee approved competition to operationally introduce projects ahead of time. All this obligates builders to increase the work pace and to do only high quality work.

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INDUSTRIAL CONSTRUCTION

TECHNICAL MEANS TO ACHIEVE LENINGRAD 'INTENSIFICATION-90' PROGRAM

Moscow STROITELNAYA GAZETA in Russian 4 Sep 85 p 2

[Article by V. Chul, Leningrad, under the rubric "Fast Tempo for Technological Progress": "Modernization: Leningrad Builders Actively Participate in the Program 'Intensification-90'"]

/Text/ For this territorial-branch program, the plans call for the creation of the following: six automated production efforts; approximately 400 automated departments, sectors and lines; in excess of 800 automated production control systems and systems for controlling technological processes and planning; more than 5,000 industrial robots and manipulators.

Production intensification will ensure stable average-annual rates of growth for labor productivity of not less than 4 percent and it will reduce the personnel requirement by almost 100,000.

"A builder is a central figure in the work concerned with accelerating scientific-technical progress. Without our help, there would be no advances here. Moreover, today construction must be carried out more rapidly, in a cheaper manner and using fewer resources" such was the opinion of deputy to the RSFSR Supreme Soviet and recipient of the Order of Labor Glory brigade leader V. Rantsev.

Viktor Semenovich is correct. In the "Intensifikatsiya-90" Program, which must accelerate the rates of economic development for Leningrad and the oblast during the 12th Five-Year Plan, a leading role will be played by the builders. In the socialist competition for worthily preparing for the 27th CPSU Congress, the oblast party organization is relying heavily upon the modernization of existing enterprises, which is furnishing a rapid and effective return.

Judge for yourself: the proportion of resources allocated for modernization, technical re-equipping and the expansion of existing production efforts, compared to the overall volume of capital investments, will increase to 80 percent by 1990. Here an important role will be played by Lenplan /Planning Commission of the Lengorispolkom/ and the Leningrad Oblast office of USSR Stroybank, which are carrying out a purposeful program aimed at renovating the logistical base for various industrial branches.

It was approximately 20 years ago that I noticed for the very first time the modernization of an industrial enterprise and personally felt its effect. At the time, I worked as a firing specialist at a Leningrad porcelain plant. I recall how the firing/kiln sectionwas literally rejuvenated before my eyes. Work became easier and more interesting. Roughly 3.5 million rubles were spent for expanding the old enterprise with its one and a half century history. The erection of a new enterprise having the same capability would have cost two times more.

Brigade leader of SU-30 Glavzapstroy /Territorial Main Administration for Construction in the Western Regions of the RSFSR/ V. Rantsev is an individual who has played a large role in the tense program aimed at modernizing Leningrad enterprises. He has been concerned with modernization work for more than a quarter of a century. In the Kirovskiy Zavod Association alone, his brigade made it possible for the forging and rolling, shape-foundry and open hearth departments to experience a second birth.

"Glavzapstroy accomplished a great deal in connection with the radical reorganization of production installations" stated Viktor Semenovich, "But we are still only at the beginning of the path. Considerably more still remains to be done."

The "Intensifikatsiya-90" Program calls for accelerated rates of growth in the construction volumes, with no increase in the number of manual or office workers and through the use of leading scientific and engineering achievements. This means that Rantsev's brigade must carry out a considerably greater volume of work using its former staff. How can this be done? It must be provided with technical documentation in a timely manner, it must be supplied with the necessary equipment for mechanization and it must be ensured an efficient system of logistical supply.

The foundation for a "brigade NTR /scientific-technical revolution/" has been established. A system has been created for the first time in the country for an automated system, using EVM's /electronic computers/, for the planning of foundations, in which a machine schedule ensures the complete readiness of drawings. A system has also been created for automated planning in which electronics forms the optimum plans for many contractual subunits, allied workers and suppliers. An ASU /automatic control system/ has been introduced which is capable of computing the documentation for the engineering preparation for construction and also balanced schedules for construction-installation work. In the final analysis, this powerful electronic complex can assist the builders in organizing the work such that each working hour of Rantsev's brigade and many others is filled with highly productive work.

The program aimed at intensifying the modernization of industry is possible only if the construction base is strengthened. Allow me to cite a significant quote taken from a document of the Council for Economic and Social Development and for Accelerating Scientific-Technical Progress of the Leningrad Oblast CPSU Committee: "During the course of carrying out the tasks of a regional special purpose program, the following work will be completed: the technical re-equipping of 13 plants, 34 production efforts and 68 departments and sectors of construction industry enterprises, the construction and placing in operation of three automated plants for the production of construction

materials and the introduction of 58 robot-manipulators for labor-intensive processes associated with the production of construction products.

The program called for improvements in the administrative structure for construction, based upon a consolidation of the contractual organizations and zoning of their activities in Leningrad and Leningrad Oblast and an increase in the capabilities of the construction organizations of ministries and departments, for the purpose of carrying out work concerned with the modernization and technical re-equipping of existing production efforts.

I believe that the readers are aware that in late 1983 and at the beginning of last year STROITELNAYA GAZETA held an extensive discussion on the problems of modernization, which it bears mentioning was initiated by an article by Leningrad authors. It is recalled that this discussion concerned the relationships of a client with a contractor, an imperfection in the normative documents, which are not ensuring adequate interest on the part of the builders in carrying out modernization work, a shortage of the equipment required for light mechanization and so forth.

A great deal has been accomplished in the city on the Neva River with regard to establishing a "green light" for modernization and technical re-equipping. One needs only to raise the paiful question regarding a shortage of construction equipment. Here the innovators of Glavzapstroy left their imprint. Small aluminum hoists have made an appearance at the construction sites -- replacements for the cumbersome tower cranes. The work of 20 pick hammers is being performed by one hydraulic hammer, mounted on an excavator base. Specialists from other cities are displaying interest in this unit, which does not dig out but rather presses out the pits for foundations. Its use has made it possible to reduce labor expenditures by fivefold.

The architects of the city on the Neva River have joined actively in the modernization of enterprises. In the modernization of the Spinning and Weaving Factory imeni V.P. Nogin, success was achieved in reducing the amount of territory made available from 6.1 to 3.4 hectares and in the process the production areas were increased by almost twofold. Such high results were obtained through an increase in the number of floors. By way of an experiment, prefabricated hipped ceilings were approved for a number of enterprises and this will soon open the path for the multistory construction of enterprises for a number of industrial branches.

"The implementation of the 'Intensifikatsiya-90" Program is raising the operational level of all of our subunits to a new stage from the standpoint of quality" stated the chief of Glavzapstroy and Hero of Socialist Labor K. Glukhovskoy. "On the whole, the volume of construction-installation work for the main administration will increase by 27.6 percent by 1990 and with no increase in the number of workers. Completely prefabricated construction operations will reach 90 percent. The builders will make their contribution towards carrying out the one general plan for the development of Leningrad and the oblast, as approved by the Politburo of the CPSU Central Committee.

7026
CSO: 1821/49

HOUSING CONSTRUCTION

COSTS OF DIFFERENT TYPES OF RURAL HOUSING CONSTRUCTION COMPARED

Minsk SELSKAYA GAZETA in Russian 6 Oct 85 p 2

[Article by L. Plechko, chief of the "Brestselstroy" Administration: "Monolith Guarantees" under the rubric "Scientific-Technical Progress Is the Basis for Intensification"]

[Text] What should the modern village be like? What kind of building should predominate there? Five to seven years ago, sectional houses of varying story height predominated in the projects for planning and construction. This led to a clutter around the lightweight board structures used for household livestock. Taking these outdoor "subsidiary structures" beyond the boundaries of the residential zone, on the other hand, creates difficulties for the farmers themselves. The alternative here became simple farmstead type construction, to which a turn was clearly outlined in the decisions of the May (1982) Plenum of the CPSU Central Committee.

Today there are four main types of design decisions for the pre-farmstead house used in Brest Oblast: brick, prefabricated wood panel, prefabricated series III-210, and keramzit concrete monolith houses. Brick building, which requires the greatest labor expenditures, should most rationally be planned in erecting a small number of farmsteads in settlements, or for accentuating and improving the architectural appearance of the village street. For this purpose, houses of the BKS series are used, with varying combination of apartments and rooms. The construction of wood panel houses, in our opinion, should be limited due to the shortage of lumber materials, which are necessary for other structural elements of buildings and structures. Wood elements are best introduced into the facades of the prefabricated and monolith variants, which breaks up the monotony, the "concreted look", and the similarity of these houses.

I will discuss in greater detail the two latter types of structures. The standard labor expenditures in building multi-story and one- and two-story houses in the large panel variant in the series III-210 design shows that the expenditures increase by 30 percent on houses of the farmstead type. The accounting data on output in natural indicators confirm this fact. The output in subsections performing construction in rural areas is only half that at the DSK [house building combine] which operates within the city limits. Consequently, the problem of increasing the building volumes of KPD [large-panel houses] of the farmstead type must be resolved primarily by means of

reducing the labor expenditures at the construction site. This entails improving the project decisions, increasing the degree of prefabrication, and especially the degree of plant readiness of the elements, improving the organization and technology of construction, and reducing material consumption. Definite work in this direction is also being performed at our Berezovskiy House Building Combine of the BSSR Minselstroy [Ministry of Rural Construction].

The specialists in our administration and in the Belorussian branch of "Giproorgselstroy" have conducted a technico-economic comparison of the construction indicators for the three basic types of farmstead houses (see table). Experience and practical application convince us of the fact that it is economically expedient to build keramzit concrete houses in rural areas. Moreover, we must consider the fact that in using monolith structures, the raw goods and materials are transported from the place of their production directly to the construction site, while the application of prefabricated structures entails the need for increasing transport expenditures: the first trip to the plant (materials), and the second--from the plant to the site (structures).

	1) Кирпичный ВКС-4	2) Из керамзитобетонных панелей серии III-210.	3) Из монолитного керамзитобетона (экспер. проект. инст. «БелНИИгипросельстрой»)
4) Сметная стоимость (тыс. руб.)	17,7	17,1	14,4
5) Приведенная общая площадь (кв. м.)	72,56	69,3	84,6
6) Стоимость кв. м. общей площади (руб.)	244	247	171

Key to table:
1 - BKS-4 brick type
2 - Series III-210 made of keramzit concrete panels
3 - Made of monolith keramzit concrete (experimental design institute "BelNIIgiproselstroy")
4 - Estimated cost (thousand rubles)
5 - Overall given area (square meters)
6 - Cost per square meter of overall area (rubles)

The transport of prefabricated structures is more expensive. This fact is particularly apparent when the facilities are dispersed and the delivery distance is increased. In the installation of prefabricated structures, the application of powerful means of mechanization leads to their unproductive application and idle time. As we know, large panel houses have vertical and horizontal joints which are open by their design decision. It is no secret to anyone that this is one of the vulnerable points of such houses. The impossibility of thoroughly sealing them up and their short service life subsequently lead to considerable operational expenditures and the need to maintain a special repair service, which in rural areas is not a simple task.

Monolith farmstead house building excludes all the drawbacks which we have listed, as they say, once and for all. The most convincing guarantee of this progressive method is its durability.

The planners are given a wider selection of overall-planning building parameters, which makes it possible to build low-story residential houses of various architectural forms in rural areas. The experimental construction of monolith keramzit concrete houses which was done showed their degree of promise in the rural rayons of the oblast. These houses received a favorable evaluation by customers and residents alike.

Under conditions of rural construction, for which remoteness from the production bases is characteristic, as is the absence of the necessary number of qualified workers, along with the traditional method of building reinforced concrete structures it is expedient to change over to the monolith variant wherever this is economically justified. This variant makes it possible to reduce the construction cost of a house by 19 percent, to realize a savings on metal, and to noticably increase the labor productivity.

Our administration began the construction of monolith keramzit concrete houses of the farmstead type in 1983. A branch of the "Giproselstroy" Institute developed stock prefabricated casings, for which water-resistant plywood was used, and the frame was made of wood. This made it possible to obtain lightweight panels whose turnover rate was up to 80 times, i.e., one set was used to build 80 houses.

All the work on building the building frames was concentrated at the specialized SPMK-74 organization, allocating a separate section there for this purpose. This is why the builders quickly assimilated the technology and perfected a clear-cut organization of labor. The results are already evident: 29 buildings were submitted for operation in 1983, in the next year--another 48, and in the current year 70 such houses will be built. As a rule, we build these houses numbering 10 units in each group, since the construction of a smaller number is unprofitable for the building organization, as the overhead expenditures in the preparatory period become too high.

We build the monolith keramzit concrete houses in two specialized flow lines by the duty shift method. A brigade consisting of two teams works on a single order. The duty watch team includes seven men and a KS-3562 pneumatic wheeled crane. Every worker has two or three professions. The team is given an MTZ-80 tractor, which is serviced by one concrete-placer and installer who is also certified as a tractor operator.

The installation and disassembly of the casing is done in consolidated sections with the use of the crane and a special traverse. The casing is moved with the aid of a tractor hitch directly from a house which is being completed to one which is being started. This excludes the need for storing the removed casings. Technologically, the concreting of the walls is done in two steps according to the following scheme: center--tractor--bucket--casing. The first flow line produces 5 monolith frames with foundation wall beams in a period 12 to 15 days for use in further general construction work. The output per

construction worker with this organization of labor reached 15,200 rubles in 1984, with an average of 11,800 throughout the administration. The average monthly wage was 250-270 rubles.

Work is continuing on the improvement of technology. Casings have been designed and built for the construction of houses to their full height and for building already monolith farm structures. To reduce the volume weight of the keramzit concrete and to save on cement, the entrainment ash from the Beloozerskaya GRES [State Regional Electric Power Station] is used. A technology is being worked out for introduction of building gypsum and chemical additives into the concrete for the purpose of reducing hardening times.

As with any new endeavor, we have our problems. As yet there is not enough interest in the construction of new villages on the part of the leading project design organizations and scientists. Mass farmstead construction is already being conducted in the oblast, yet variation in the model projects is still absent. Everyone knows that it is impossible to give architectural expression to a population center using only two or three types of houses, despite the fact that so much is said about this expression by rural architects. Planners may refute me. They may say, for instance, that we already have a large number of projects. Yes, but they are not industrial and not unified, and no one will let us reduce labor productivity.

The specialists at the "BelNIIgiproselstroy" Institute must deal closely with this matter in the course of their work. But as yet they study only experience and wait to see what will become of monolith house building. Life itself has proven its advantages. It is paradoxical, but it is a fact: the builders themselves are looking for more rational and economic methods of construction in rural areas. The specialists are not keeping quiet.

And one more thing. The quality of keramzit gravel supplied by Minpromstroy-material [Ministry of the Building Materials Industry] leaves something to be desired. The fine keramzit sand filler material also lacks in quality. It is time to begin the output of economical and mobile mortar-concrete units for monolith construction. The need has arisen for a project for the construction of rural schools, preschool institutions and other buildings of a social-cultural-domestic function in the monolith variant and with the application of unified casing.

12322
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HOUSING CONSTRUCTION

FAMILIES BAND TOGETHER TO BUILD OWN HOUSES

Moscow TRUD in Russian 30 Jun 85 p 2

/Article by the LESNAYA PROMYSHLENNOST' editorial board: "The Family Built the House: A New Method of Home Building"/

[Text] How to build oneself a house more quickly and better? The collective of the Udmurtles [not further identified] Association answered this question in a definite manner: by means of the family contract. This is precisely how more than half of the one- and two-apartment houses are being built here. During the four years of the five-year-plan, 45,000 square meters of housing --two plans!--have been turned over for occupancy. In the Irginskiy Lespromkhoz [Integrated Logging-Lumbering Enterprise], for example, a residential micro-district of 70 separately-operated houses grew up during the last 3 years. There almost all of the sections of land allotted for building have already been developed.

The collectives of the Bel'skles [not further identified] Association of Irkutsk Oblast and the Perm Plywood Combine, too, have become convinced of the advantages of the family contract in practice. During the past 4 years, more than 4,000 square meters of housing were turned over for occupancy in the Bel'skles [Association]. More than 60 families of lumber-jacks and woodworkers received new apartments. And here is the result: the turnover of personnel decreased to 1/2 of the previous level, labor discipline grew stronger, young people were drawn to the enterprises, and, as a consequence, production affairs went uphill: the association, which had been lagging behind, began to produce a yearly profit of up to 3 million rubles. And where there is a profit, there are also additional deductions to the appropriate funds, from which more than 60 percent are directed into housing construction by the association.

The family contract is an undertaking that in principle is not new. Its rather successful use is making it possible for the wood industry to fulfill --already for the second year--the housing plan in 10 months. How is the family contract organized?

At a joint session of the management and the trade union committee of the enterprise, a decision is taken concerning the allotment of houses or apartments to workers and employees who have expressed the desire to take part in the construction. As a rule, the applications of those are accepted who have been working at the enterprise for a long time, as well as those of young workers with families.

Prior to the beginning of construction, a contract is concluded between the enterprise and the person building the house, according to which the enterprise acts as the customer, and the person building the house--as the contractor. According to the provisions of the contract, the customer turns over, and the contractor takes upon himself, the execution of general construction and specialized work operations in strict conformity with the planning estimates. In those cases where the person building the house cannot carry out, for example, plumbing or electrical work, the enterprise performs it. The contract provides for the allotment, to the person building the house, of a full set of structures for the house, other building materials (in accordance with the plan), as well as construction machines and mechanisms for the delivery of building materials to the project and the execution of construction and installation work. In the absence of a complete set of structures for a house, timber (beam, round timber, window and door units) in accordance with the model specifications are allotted. The contract sets forth construction periods which correspond to the norms for the length of the construction of residential housing.

Payment for the work that has been carried out is allocated to the person building the house on the basis of orders composed in accordance with common norms and calculations, taking into account the rayon coefficient and the bonus markup for the timely delivery of the house for occupancy and for high quality of work.

During the construction of houses, many of the persons building a house use the time during which they are free from their basic work. In order for the house to be built more conveniently and on a makeshift basis, all adult members of the family are granted holiday leave at the same time. The holiday leaves of relatives wanting to help, too, are timed to coincide with this term. Thus a rather impressive brigade is "knocked together". Well, and the quality of work is excellent: "The domestic OTK [department of technical control]" does not pass defects! You see, they are building for themselves, they themselves will live in this house. If the person building a house did not succeed in completing the construction, the enterprise meets him half-way: Temporarily he is included in the department of capital construction, where he works in more than one job, finishing building his house.

When mass building takes place, several families organize a distinctive construction cooperative. Practice has shown that this is very convenient and efficient. Those who are more experienced in construction matters give assistance to those for whom building a house is a new experience. Friendly support and mutual assistance not only help in the construction of an individual house, but also form a special moral micro-climate in this small collective, spiritual cohesion in a common cause and a good work inclination. So that the family contract has still another quality of no small importance--it educates. This is especially important for children, who work side by side with the adults.

At the Perm Plywood Combine, brigades are formed from among those who are building houses, whose overall management is carried out by the foreman of the repair and construction shop. The construction is controlled by the capital

construction department and the managers of the shops whose workers are building houses on the basis of a family contract. That is why, as a rule, both the terms of the construction of houses are shortened by 10-15 days as compared to the effective norms of the length of construction, and expenditures are simultaneously reduced. With an estimated cost per square meter of construction of an arbolit house of 150 rubles, the actual expenditures amount to 136 rubles on the average, and of an apartment house of wood bearing wall construction--146 and 142 rubles respectively.

The honest and timely fulfillment, on the part of the management, of its obligations with respect to the contract is one of the basic reasons why the number of those desiring to undertake the matter independently is constantly growing.

"We now have not one housing line for obtaining housing and expansion, as usual, but two," the chairman of the trade union committee of the Irkutsk Bel'skles Association, Nikolay Ivanovich Krylov, tells us. "The second is for independent building."

The chairman of the trade union committee also told about a case where the person who had built a house on the basis of a family contract was deprived of the right to receive an apartment in it. A case, of course, that is extraordinary, but instructive. We are talking about one of the foremen of the head enterprise. He undertook a contract, as authorized, independently, in his free time, but then, making use of his official position, brought out to "his" house a construction brigade, which was expected at a completely different project. This is why, when the time came, the trade union committee allotted the new apartment, not to the foreman, but to one of the leading workers of a saw mill. In this case, the trade union committee carried out the will of the majority of the workers of the enterprise and acted in complete conformity with the Law on Labor Collectives.

What helped the family contract to be allotted so reliably in the collective of Bel'skles? N. Krylov believes that the desire to build a house with one's own hands and to settle for good in Tayturka, Novostroyka or Tal'niki (settlements of the timber industry enterprise) also arises in people because both the management and the trade union of the association have begun to show more concern for public services and amenities of the settlements, about the everyday needs and cultural needs of the collective.

"The logic here is a simple one," N. Krylov explains. "Nobody will start to build himself a house in a bad settlement. In Tayturka, for example, almost all roads have already been asphalted. There is a club, a kindergarten, there are day nurseries and a hospital, and plans call for the construction of a House of Culture, a new kindergarten, a store and many other cultural and everyday projects. Several sports sections have been created at the head enterprise, including a motor sport group. And what dance and voice ensembles we have! Every shop has its own amateur talent activities. . . In general, people have a cause for settling and putting down roots."

They have calculated in Bel'skles that during the past two years, thanks to

the family contract, more than 30,000 rubles were economized in wages alone. That will do to pay for the work to erect 6 2-apartment houses. A large quantity of materials was saved. And the high quality of execution guarantees a long service life of the houses and, consequently, economy in current repair and capital repair.

And nevertheless, up to now the family contract has essentially not been legalized. Life demands that corrections be introduced, for example, in the distribution of fund building materials. Things go to the point that even "scales" (cheshuya)--decorative door plates for the trimming of building facades, which they started to produce in the Bel'skles Association on their own initiative from wood waste materials, can be sent wherever you like, only not for the decoration of their own settlements. Here is what happens. We are building new houses, but with our eyes turned to the past--everything for one person, according to a single model.

Things are no better with other, "non-wood" materials. We must not talk about brick. Everyone knows there is a shortage and one cannot even dream of getting additional funds of it. There remains prefabricated reinforced concrete. In Tayturka quite a number of 2-apartment houses have been built from panels. Moreover, such construction is carried out much more easily and quickly than wood construction, and people undertake it with greater desire. But the association has no panel funds.

"Now," says the deputy chief of the Irkutsk All-Union Production Association of the Timber Industry for capital construction, N. Dmitriyev, "the advantages of housing construction on the basis of a family contract have been felt in many small corners of the taiga country in the Angara Territory. Now housing is being built in this manner in the settlements of Bratskles, Kitoyles, Vostsiblesosplav, and other associations. And, of course, they experience identical difficulties everywhere and overcome them as best they can."

The new method is a creation of the initiative of the people. In it the interests of the family and the state merge into one. To legalize its "right to life", having put its development and dissemination on a plan basis, is a vitally important task of the day.

8970
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HOUSING CONSTRUCTION

MODULAR CONSTRUCTION METHOD EASES HOUSING SHORTAGE

Moscow SELSKOYE STROITELSTVO in Russian No 8, Aug 85 pp 21-22

[Article by N. Pozdnyakov, Chief Engineer of the Alma-Ata Agricultural Construction Trust No 7 and A. Vil, Deputy Chief of the Technical Administration of the Ministry of Agricultural Construction of the Kazakh SSR: "Casting-Yard Manufacture of Modular Units"]

[Text] The problem of satisfying the demand for housing and cultural and social facilities in the rural areas of Kazakhstan, especially in its seismic regions, is still quite severe.

Since 1984, the Alma-Ata Construction Trust No 7 has set about mastering the construction of rural-type residences from modular room units manufactured on assemblies developed by the Kazakh Construction Industry Scientific-Research and Planning Institute. The plans for the residences are executed by the Kazakh Civil Agricultural Design Institute.

The close cooperation of the builders with the scientific-research and design institutes produces positive results in the development and application in practice of progressive design solutions. Thus, in the preliminary assimilation phase of modular room unit manufacture, principles quite different from those presently in use in the country were developed and accepted for application at joint technical conferences.

The new technology is based on creating modular room units of two or three planned sizes on the construction site with the aid of molding assemblies.

The Kazremstroymash Construction and Repair Plant of the Kazakh SSR Ministry of Construction of Heavy Industry Enterprises manufactured, according to the plans of the Kazakh Construction Industry Scientific-Research and Planning Institute, two assemblies for molding the Kolpak-type modular kermazit-concrete units with interior dimensions of 5,800 x 2,800 x 3,210 mm and 5,800 x 3,700 x 2,700 mm (length, width and height). The production of the units can be set up right on the construction site when the air temperature is from -20° to 50°C.

The molding assembly is made up of a core, mounted on a frame, and hinged longitudinal and transverse sides installed on its four sides. Inside the

frame pass pipes for warming the concrete after pouring. Space in the side serves as a steam jacket, where the steam is fed by hoses from the steampipe for the molded product.

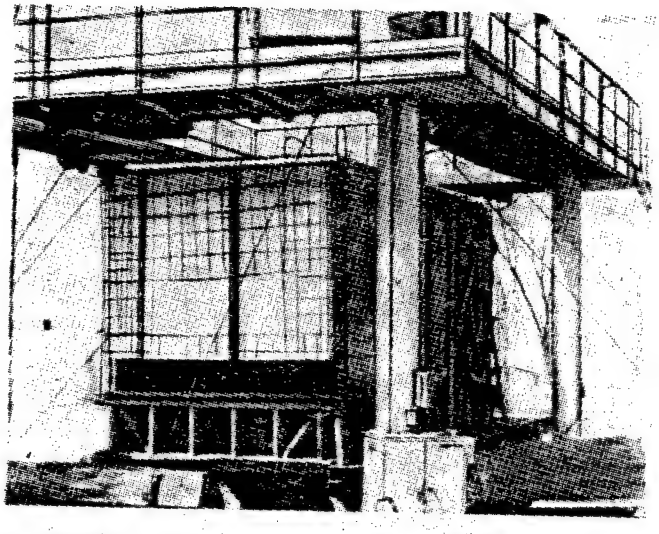
The versatility of the machinery is provided for by the rearrangement of the longitudinal sides, which presents the opportunity of producing units with walls of 70 and 250 mm thickness (respectively for the interior and outside walls). The transverse sides are installed in a fixed mode: one at a thickness of 70 mm and the other at 250 mm (the latter is made in three layers). Foam rubber of 100 mm is used for insulation.

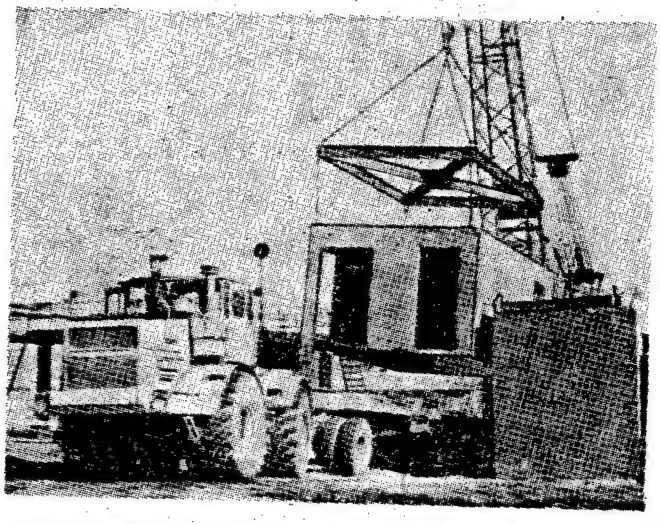
The technology of room unit manufacture is as follows. A reinforcing cage and foam rubber are set up on a cleaned and greased core. Aperture forms are fastened with bolts to the sides of the assembly. The sides are closed and the latches are fastened. The core is heated up before molding to diminish the mechanical loads on the sides. The placement of the concrete begins next, accompanied by the sealing of the kermazit-concrete mix using side vibrators. In finishing, the unit formation is steamed. After the kermazit concrete is compressed to the necessary strength, the sides are opened and the extraction mechanism detaches the steamed product from the core. The finished product is removed by an RDK-25 crane with a lifting capacity of 25 tons.

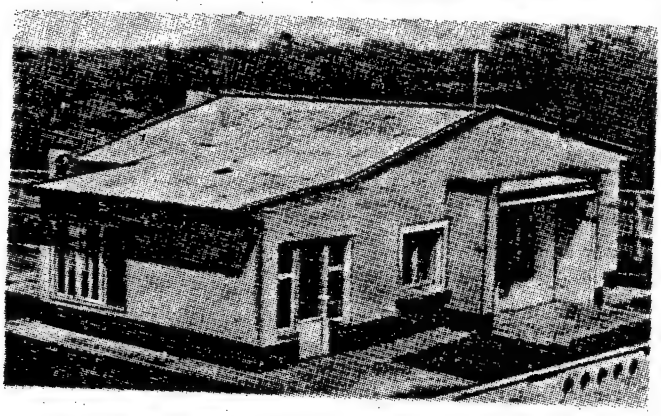
Positive results were received from the practice of manufacturing and constructing one-story rural residences from room units with 3B-, 4B- and 5B-type apartments and two-story two-family residences with 5B-type two-level apartments under conditions of an unequipped casting yard.

The possibility was discovered of manufacturing thin vertical walls from kermazit concrete with a thickness of 70 mm and a height of 3.4 m without separation of layers and the breakdown of the uniformity of the concrete mix. The vertical casting of three-layer walls of kermazit concrete is provided for with a rigorous fixing of the effective insulation. A full utilization of the bearing capability of the material owing to the dimensional functioning of the room unit demonstrates high reliability in seismically active regions with a significant economy of materials. For example, the construction of a one-family brick residence with a 5B-type apartment requires, on average, the consumption of 1,800 kg of metal and 49,000 bricks. However, in a modular-unit version of such a house, the consumption decreases to 1,200 kg of metal and 4,500-5,000 bricks (for the execution of partitions and other such elements).

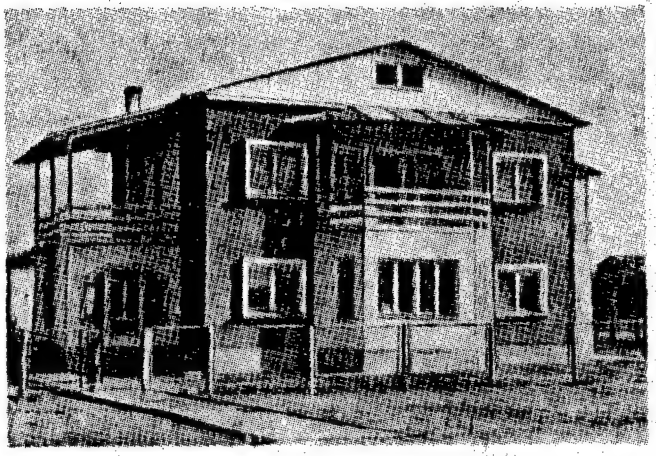
Production time has been shortened in the manufacture of the room units; moreover, there exist reserves for its additional decrease by completing the reinforcing cage outside the assembly on a jig. Labor expenditure was decreased by 1.5-2 times in the erection of residences of modular room units compared to traditional methods: structural work was eliminated and the room unit surfaces allow finishing with the final coat of paint. Labor productivity has grown. The cost of the construction and assembly work is no greater that for houses in large-panel form.

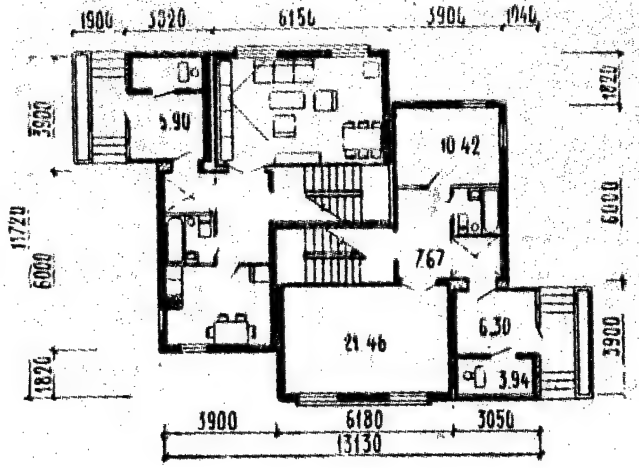




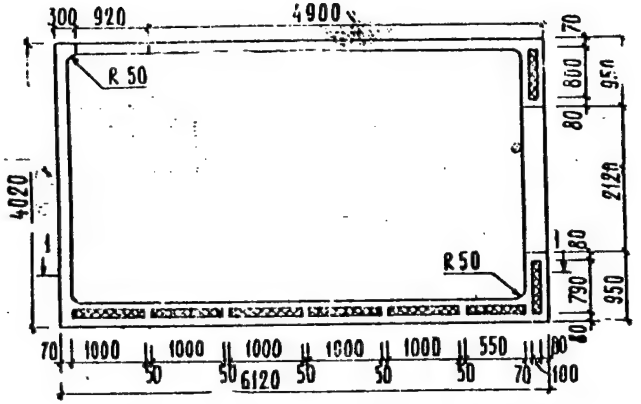


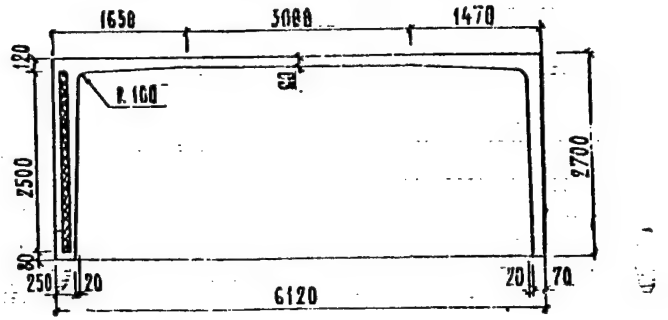
General view of the modular unit molding assembly in Kok-Tyube; loading a unit onto a vehicle; a single-family residence with a 4B-type apartment made from modular units.





A two-family residence with 5B-type apartments; floorplan of a two-family residence with 4B-type apartments made from modular units.





Floorplan and sectional view.

In the future, the room units will arrive at the construction site completely factory-prepared, including the installation of millwork.

Currently planned is the construction of a casting yard with 6-8 assemblies producing 20,000-25,000 m^2 of modular units a year on the premises of the KSKM-3 in Kok-Tyube.

12821

CSO: 1821/045

CONSTRUCTION MACHINERY AND EQUIPMENT

SPARE PARTS PROBLEM WITH TRACTORS RECEIVES OFFICIAL ATTENTION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 4 May 85 p 2

[Unsigned Article: "Attention to Quality. The Paper Spoke Out. What has Happened?"]

[Text] The lead article "A word to the Reader," published on 17 February, criticized agricultural machine-building and automobile industry enterprises that have failed to meet planned deliveries of equipment and spare parts to agricultural workers.

The deputy minister of tractor and agricultural machine building, V. Chernov, has advised the editors that this article was examined carefully in his ministry and that the criticism which it directed at his industrial branch was recognized as justified. The state of affairs with regard to fulfilling deliveries of equipment and spare parts to the countryside was discussed within the collegium of the Ministry of Agricultural Machine Building and measures were designated to eliminate existing shortcomings. The ministry is checking daily how these tasks are being carried out.

In his answer to the article, the secretary of the party committee at the production association, Chelyabinsk Tractor Plant imeni V. I. Lenin, V. Bogomolov, admitted that, besides the carelessness of subcontracting plants and a shortage of railroad cars, the reason for the failure to produce specific types of spare parts is also to be found in an insufficiently high level of production organization within the association itself. Shortcomings are now being eliminated. A commission has been created under the party committee and is supervising the activity of the administration in organizing spare parts production. Every month, the party committee examines the course of their deliveries to consumers, in the first instance to agriculture. The technical services of the association have developed and are implementing measures which will make it possible to expand capacity and improve the quality of production.

The director of the Tutayev Diesel Assemblies Plant, A. Malov, also responded to the article. He advised that the questions touched upon in the article were discussed at a meeting of the chief engineer and also by the personnel of the shop which produces piston sleeve assemblies. Workers guilty of manufacturing defective products were punished by plant-wide reprimand.

To improve the quality of piston sleeve assemblies, it is planned to carry out a set of measures during 1985-1986. These include the introduction of a fundamentally new technological process for manufacturing cylinder bloc sleeves which will exclude distortion of parts during processing, equipment renovation and improvements in the system of paying the workers so that the quality of the parts they produce will become their main criterion.

13032/13167
CSO: 1821/010

CONSTRUCTION MACHINERY AND EQUIPMENT

BRIEFS

MILITARY CONSTRUCTION EQUIPMENT SHOWN--Red Banner Precarpathian Military Okrug--Machinery and devices developed by innovators at military construction projects and enterprises and recently assimilated by industry are capable of considerably increasing labor productivity and the quality of construction. Among them is a polishing machine with diamond heads used for finishing concrete tile floors and a unit for drilling holes in reinforced concrete. The equipment of a modern repair and diagnostic base drew the particular interest of specialists. These and other innovations were demonstrated at a conference at the headquarters of the okrug's construction administration attended by the chief mechanics of okrug and fleet construction administrations and administrations for mechanizing operations as well as by the chiefs of specialized UNR [not further identified]. [By reserve colonel S. Kuts] [Text] [Moscow KRASNAYA ZVEDA in Russian 24 Aug 85 p 2] 13032/13167

CSO: 1821/010

CONSTRUCTION METHODS AND MATERIALS

LOCAL PRODUCTION OF INSULATING CELLULAR CONCRETE IN SIBERIA

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Sep 85 p 1

/Article by V. Korovkevich, chief specialist on cellular concrete at LenZNIIEP and P. Eving, department head at NIPO for Silica Concrete, Leningrad - Tallin: "Homes for Siberians"/

/Text/ During his visit to western Siberia, M.S. Gorbachev devoted serious attention to the need for expanding decisively the construction of housing and socio-domestic projects in regions where petroleum and gas are being extracted and for creating good domestic conditions for productive labor by the workers of western Siberia. It is known that for many years now some republics have been using their own resources to build schools, childrens' institutes and other installations in this region.

At a conference held in the CPSU Central Committee, it was recommended that the ministries and departments undertake urgent measures aimed at strengthening and developing the industrial base for construction and the construction materials industry in the western Siberian region, expanding the scale of completely prefabricated housing construction and raising the degree of plant readiness of construction structures and parts.

This is of tremendous importance. Indeed, today a considerable amount of materials and structures is being shipped here from distant points.

Each year, with the opening of navigation, nine-story apartment dwellings are being shipped from Leningrad to Urengoy. On the shores of the Neva River, the cost of 1 square meter of such housing space is 160-200 rubles and on the shores of the Pur River, following several trans-shipments, the price jumps to 1,100 rubles. The cost of dwellings which are transported to Tyumen from Estonia and other regions also jumps several times. Are these costly trips justified? It turns out that the answer is yes. Indeed, these buildings are made out of autoclave cellular concrete, which is not being produced in western Siberia. And they are very suitable for regions marked by a stern climate: their heat-reflecting properties are higher by 20-30 percent than those for brick buildings.

But would it not be more efficient to organize the production of products made from autoclave concrete directly at the construction sites? Here there can be only one opinion. The LenZNIIEP Institute has repeatedly submitted such a

recommendation to Minneftegazstroy /Ministry of Construction of Petroleum and Gas Industry Enterprises/ -- the principal builder in the petroleum and gas extraction regions of western Siberia, while pointing out the need for the intensive development of this sub-branch for construction materials. This position was reinforced by a joint document by the union Gosplan and Gosstroy organizations, which "consider it advisable to develop the production of goods made from silicate concrete in regions located at some distances from the supply sources for cement and coarse inert aggregate -- crushed stone, which have local resources of sand and lime and which are experiencing shortages in prefabricated reinforced concrete structures and products, especially for the construction of dwellings."

At one time, Minneftegazstroy advocated this point of view. In accordance with an order by the ministry, an institute made plans for a plant for autoclave concrete at Nadym and construction was started. But subsequently, in connection with difficulties in obtaining the necessary equipment, Minneftegazstroy reoriented the plant towards the use of other materials. In addition, it also reoriented its technical policy by developing the production in western Siberia of products made from conventional concretes.

In this example, as in a drop of water, a situation typical of the industry of autoclave concretes is reflected. Today, such concrete is being produced by 96 enterprises of 18 different ministries and departments. And each is following its own line. Thus, whereas USSR Minstroymaterialy /Ministry of the Construction Materials Industry/ over the past 10 years increased its production volume by a factor of 2.1 at 34 of its enterprises as a result of technical re-equipping and other progressive measures and plans to build and expand 61 enterprises during the 12th Five-Year Plan and whereas Minvostokstroy, for the zone of its influence in the southern Yakutsk TPK /territorial production complex/, Khabarovsk Kray and Chita and Amur oblasts, planned for the 12th Five-Year Plan and beyond an extensive production organization for the production of products made from avtoclave concretes using local raw materials, the remaining brances not only do not intend to increase the production of these materials but in fact over the past few years they have even decreased such production by one and a half times. As a result, the country is annually being undersupplied in the amount of approximately 2 million cubic meters of highly efficient construction products. In addition, 27 autoclave concrete enterprises were reoriented generally to the production of other materials. And this represents a loss of still another half million cubic meters of product.

Meanwhile, there is a raised demand among the consumers for construction products made from autoclave concretes, especially small cellular units. And this fact has been recorded for some time now on the list of materials which are in short supply. The laying of a square meter of this material reduces the weight of walls by a factor of 4-5 compared to the use of clay brick. Here the labor-intensiveness of construction is less by a factor of two and the expenditures involved are lowered by more than twofold. Yes and the estimated cost of construction using cellular concrete is considerably lower than when use is made of any other material. According to rough estimates, the annual requirement for such units is 10 million cubic meters. Only slightly more than 2 million cubic meters are being produced at the present time.

Such "discrepancies" are particularly surprising in view of the fact that both the builders and production workers prefer autoclave concretes over any other type of material. Moreover, sand and limestone, which are available everywhere, are used in their preparation. Tyumen possesses such materials literally in unlimited amounts. Here there is no requirement for deficit gravel, crushed stone or artificial porous aggregates. The consumption of cement is decreasing sharply and the consumption of energy resources is declining by a factor of 2.5. The output per worker in the production of small units made out of cellular concrete is higher by a factor of five than, for example, in the production of brick.

How can this situation be corrected? It is our opinion that the best solution would be to concentrate all enterprises of the autoclave industry in one branch, for example in the USSR Minstroymaterialy. Certainly, such reorganization will not be easy and, in addition, a considerable amount of time will be required. In any case, a requirement will exist for improving planning and for concentrating it in one branch of the union Gosplan. This will make it possible to follow a uniform technical policy in developing the sub-branch. This will include an examination of the geography for the construction of autoclave concrete enterprises, while bearing in mind the development of the territorial industrial complexes. Primarily for the northern regions of the country, the Far East and the zone of BAM /Baykal-Amur Trunkline/.

7026
CSO: 1821/60

CONSTRUCTION METHODS AND MATERIALS

UDC 666.940:947.086.088

HISTORY, CURRENT CAPACITY OF SOVIET CEMENT INDUSTRY VIEWED

Leningrad TSEMENT in Russian No 5, May 85 pp 1-4

[Unsigned article: "USSR Cement Industry During 40 Years of Peace"]

[Text] After the expulsion of the German-Fascist invader from the territory of the Soviet Union and the victorious termination of the Great Fatherland War, great problems arose in our country in relation to restoration of the national economy. It was necessary to repair and again construct dwellings and cultural and welfare facilities and to restore factories, plants, electric power stations and other objects destroyed by the Hitlerites. Cement was needed for this purpose. But during the war the production of this bonding material was considerably reduced in the country: from 5.7 million tons (1940) to 1.8 million tons (1945).

The party and the government assigned a task to cement industry workers: in a short time restore the cement plants which had experienced occupation and destruction, and also proceed to the planning and construction of new plants.

A major role in the implementation of this task was played by the only branch institute existing at that time, Giprotsement, as well as the enthusiasm and self-sacrificing labor of workers at cement enterprises.

Already prior to termination of the war, in late 1943, at the direction of the USSR People's Commissariat of the Construction Materials Industry, Giprotsement proceeded to an investigation of the plants and the preparation of plans for their restoration. Integrated brigades of institute workers were organized and sent to Kharkov and Novorossiysk for implementing planning and design work in the field and for more rapid restoration of cement enterprises in the Ukraine and in Krasnodarsk Kray.

The plants of Amvrosiyevka produced the first cement two months after liberation in October 1943. In 1944 Novorossiysk plants began production, as well as the plants in Leningrad, Dneprodzerzhinsk and Volkovyssk. The output of production was increased in the Moscow area and at Volsk, in Siberia and in the eastern regions.

As early as 1947 this made it possible to achieve the pre-war level with respect to the volume of cement production, and in 1948 6.45 million tons of bonding

With the starting-up of the high-capacity kilns using the wet and dry production methods there was a reduction in the specific consumption of conventional fuel in the kilning of clinker during the period from 1961 to 1982 by 50.3 kg/ton, and also during this period there was a decrease in the specific consumption of electric power by 2 KWh per ton of cement despite a substantial improvement in the variety of bonding materials. For example, with a total increase in the volume of cement production by a factor of 2.7 during the years 1960 through 1982, the production of portland cement increased by a factor of 4.2, well-sealing cement by a factor of 3.5, and sulfate-resistant, road, arenaceous and decorative cements by a factor of 8.

An important stage in the development of the branch was the automation of production, initiated in the 1950's. During the first period numerous local outfits were constructed on the basis of analog regulators for the control and stabilization of operation of individual mechanisms and also for the control of some technological processes: grinding, mixing, drying and kilning.

By the late 1960's more than 600 such systems had been introduced and various kinds of work were done on the development and fabrication of remote control devices.

The establishment of the "Soyuzavtomatstrom" All-Union Scientific-Production Association made it possible to ensure a full cycle of studies, from research to the industrial output of instruments and apparatus for automatic monitoring, regulation and control of technological processes, which favored an increase in the efficiency of cement production due to an increase in the reliability and routineness in the performance of technological processes and also provided conditions for the further development of automation work.

In 1972 the "Tsement-1" automatic control system was put into use at the Sebryakovsk plant, to one degree or another affecting all operations at the enterprise. Its introduction made it possible to increase the productivity of rotary kilns by 2% and cement mills by 6%, to reduce the specific consumption of fuel and electric power by 2-4% and also to ensure an increase in the average grade of the cement by 10%. But most importantly, this system demonstrated the broad possibilities for the automation of production.

During the Ninth Five-Year Plan the "Soyuzavtomatstrom" association introduced about 30 industrial production automatic control units into the construction materials industry; during the Tenth Five-Year Plan their number increased to 50, and during the Eleventh Five-Year Plan its plans called for the output of 70 such units, with the cement industry receiving more than half of them.

Now industrial automatic control units have been introduced in the production lines for the dry production method at the Novokaragandinsk, Novospassk, Navoysk, Lipetsk and other plants, which demonstrated the mastery of the methods for making use of the great possibilities of modern automatic control systems by developers and production personnel. The savings as a result of automation of cement production during the Tenth Five-Year Plan was about 10 million rubles.

A promising direction in the development of automation was the development of so-called automated technological complexes (ATC). The experience with systems planning of ATC at the Rezinsk and Krivoy Rog plants indicated that this resulted in a substantial improvement in technological layouts, a decrease in capital investments and operating costs, a considerable reduction in the expenditure of fuel, power and material resources, and also the number of personnel per unit production.

During the post-war years extensive scientific research was carried out on the principal problems in the chemistry and technology of cement with a great number of scientists and engineers being involved in this work.

As work proceeded on the restoration of destroyed enterprises and on the construction of new enterprises the integrated brigades of Giprotsement (State Design and Planning Institute of Enterprises and for Scientific Research in the Cement Industry) were transformed into affiliates of the institute and a Giprotsement affiliate was also established at Novosibirsk. Independent institutes were later founded on the basis of these affiliates: Yuzhgiprotsement, Novorosgiprotsement (now the NIPIOTstrom) and SibNIIproyekttsement, and in addition, the State All-Union Scientific Research Institute of the Cement Industry (NIItsement) was organized.

The Belgorod Technological Construction Materials Institute was founded in 1970 as a base college of the USSR Ministry of the Construction Materials Industry.

The departments of the new institute and the specialized departments of the Moscow Chemical Technology Institute imeni D. I. Mendeleyev, the Leningrad Technological Institute imeni Lensovet, the Novocherkassk Polytechnic Institute and a number of other academic institutions, as well as the Chemistry of Silicates Institute, USSR Academy of Sciences, are actively participated in scientific research work favoring development of the cement industry.

Research on the chemistry and technology of cement has been carried out by Academicians P. A. Rebinder, P. P. Budnikov and A. A. Baykov, as well as N. A. Toropov and V. V. Timashev, corresponding members USSR Academy of Sciences.

Research on raw material reworking processes, clinker formation, construction-engineering properties and hydration of cement have been carried out in Moscow under the direction of Professors V. N. Yung, B. S. Shevtsov, Yu. M. Butt, I. V. Kravchenko and T. V. Kuznetsova, in Leningrad with the participation of Professors V. A. Kind, V. F. Zhuravlev, S. D. Okorokov and M. M. Sychev, in Kharkov by Professor O. P. Mchedlov-Petrosyan and in Dnepropetrovsk by Professor V. V. Tovarov.

The compositions and technology of production of many new types of cement have been developed: well-sealing cement for cold and hot holes, road cement, cement for the production of asbestos cement items, high-strength cement, rapidly hardening cement, especially rapidly hardening cement, aluminous cement, expanding cement, resilient cement and a number of others.

The work of specialists of the scientific part of the oldest institute of the branch, Giprotsement, which from 1950 through 1980 was headed by B. V. Volkonskiy, Bearer of the Order of the Great Fatherland War, was devoted to the

development of energy-saving technologies and improvement in the quality and variety of cement.

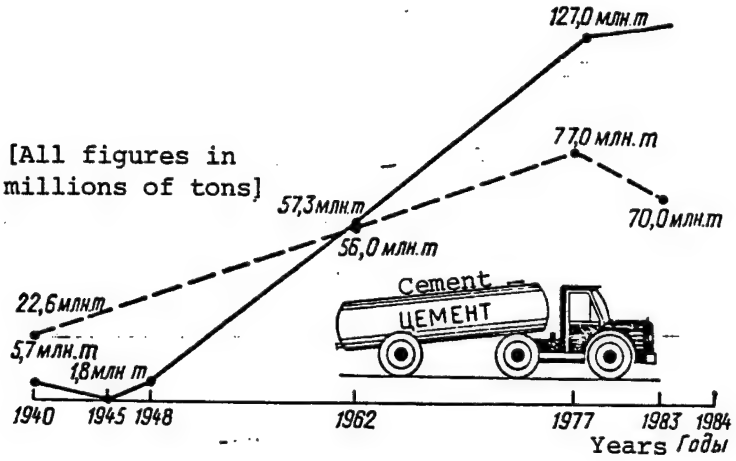


Fig. 1. Dynamics of development of cement production in USSR (solid curve) and United States (dashed curve).

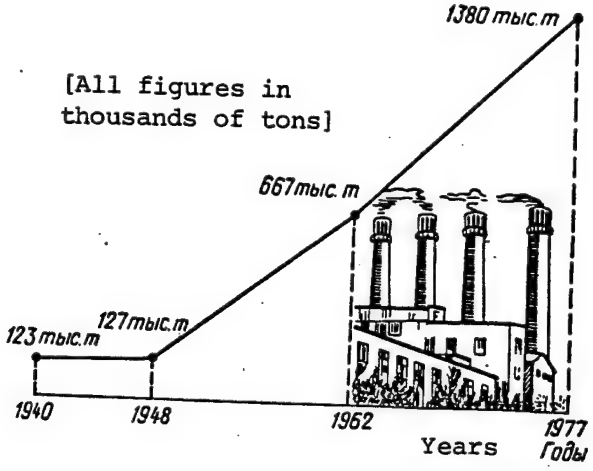


Fig. 2. Increase in mean capacity of cement enterprises.

In Giprotsement a specialized technical council was established for the development of equipment. Together with the assistance of the leading designers in the field of heavy machine building it prepared technical designs for the principal technological plant units for cement production and on their basis Giprotsement developed standard designs for production lines and plants with rotary kilns measuring 4.5 x 170 and 5 x 185 m.

Much work, energy and knowledge was invested in the designing of cement plants and the development of research by the directors of the institutes Yu. S. Lurye, N. Ye. Dobrovolskiy, A. F. Semendyayev and V. I. Satarin.

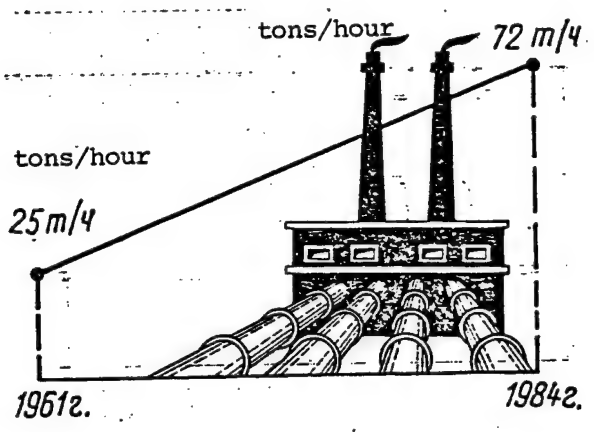


Fig. 3. Hourly productivity of main type of kilns in 1961 and 1964.

The implementation of scientific research work under comprehensive scientific-technical programs (three national and nine branch) was initiated during the Eleventh Five-Year Plan.

Energy-saving technologies are being developed and auxiliary work is being mechanized. Studies are being made of the problems involved in improving the quality and variety of cements. The use of industrial wastes of other branches of industry is expanding.

The broad scale of scientific work is indicated by the fact that it calls for the development of more than 30 new technologies and about 20 new mechanization systems. In contrast to past years, emphasis is not only on research, but also on the introduction of most developments into production.

The implementation of the comprehensive programs each year will make it possible to save about 150,000 tons of conventional fuel and more than 200 million KWh of electricity, to expand the output of high-strength, stressed, decorative, well-sealing and other types of cement, to realize a saving in the sum of 78 million rubles and lighten the work of 2,000 workers.

These goals are quite complex: the national and branch programs for the cement industry include about a hundred objectives, each of which is an independent field of research. In their implementation, in addition to the key institutes, about 40 collaborating organizations are participating.

A number of goals have already been met. For example, the State All-Union Scientific Research Institute of the Cement Industry (NIItsement) and the Perm Affiliate of the All-Union Scientific Research Institute of the Cellulose-Paper Industry developed a superplasticizer on the basis of lignin sulfonates -- LSTM-2. Its addition during the grinding of cement increases the specific surface of the bonding material by 300-500 cm^2/g without a decrease in the productivity of the mills.

The use of portland cement grade 550 with LSTM-2 added makes it possible to save from 10 to 14% of the cement per 1 m^3 of concrete in comparison with portland cement of grade 500 or increases the ease in laying concrete mixes by twice without a decrease in strength.

The industrial output of this superplasticizer has been assigned to one of the cellulose-paper combines where an apparatus with a productivity of 10,000 tons of additive per year has been put into operation. This is adequate for more than 2 million tons of bonding material. The use of LSTM plasticizer began in 1982 at the Sebryakovsk cement plant and at the Amvrosiyevka combine.

The NIItsement, in collaboration with Yuzhgiprotsement and the Institute of Colloidal Chemistry and Water Chemistry, Ukrainian Academy of Sciences, proposed synthetic crystallization components (crents) from precalcined kaolins and wastes containing sulfuric acid or iron sulfate.

Within the framework of the program the first consignments of crents were obtained at the experimental plants of the NIItsement and Yuzhgiprotsement and used at the Podolsk experimental cement plant and at the Amvrosiyevka combine for the production of high-strength cements of grades 550-600.

The heat expenditures on the calcining of kaolins for crents were approximately 25% of the theoretical expenditures for clinker formation. With the replacement of 5-10% clinker by crent about 75% of the fuel is saved (scaled to the replaced fraction of clinker). In addition, crents are ground considerably more easily than clinker and intensify its pulverization by 20-25%, and with retention of the former grade of cement -- by 35-40%. This makes it possible to reduce the expenditure of electric power.

Specialists at the NIItsement developed and at the Shchurovsk plant introduced a new technology for the combined whitening of clinker instead of whitening by water. This made it possible to eliminate the drying drum from the production line, considerably increase whiteness and increase the output of high-grade white cement. As a result, the plant profit was increased in 1983 by 450,000 rubles.

The institute also proposed and introduced in more than 100 mills a reinforced lining from rolled components with a variable cohesion coefficient. Because of its cheapness and the increase in time of useful service a saving of more than 3 million rubles per year was achieved.

Giprotsement improved the system for the decarbonization of the pulverized material in a shaft-cyclone heat exchanger by means of the burning of gas in the shaft tuyeres of kiln No 3 of the Katav-Ivanovsk plant. In 1983 the method was used in the production of about 200,000 tons of clinker with a productivity of 51.4 tons of clinker per hour.

With participation of specialists at the institute work was done at the Novospassk plant for optimizing the calcining regime in kilns with cyclone heat exchangers, experiments for the mastery of production of cement of grade 500 with use of mills of the closed-cycle type were completed, and optimum regimes were developed for the operation of a grinding apparatus ensuring the output of bonding material of this grade. The mean productivity of a mill was 90 tons/hour and the specific consumption of electric power was 43.3 KWh per ton when grinding cement to a specific surface of 3,500-4,000 cm^2/g.

At Giprotsement a mathematical model of the process of decarbonization of raw material has been developed for the dry method of cement production.

With the participation of institute specialists work has been completed on the adjustment and starting-up of a grinding facility in the production line at the Savinsk plant. This facility includes a wet self-grinding mill measuring 7 x 2.3 m and a mill measuring 4 x 13.5 m for final pulverization. In this way it was possible to achieve a the planned productivity of the production line, for dry raw material -- 130 tons/hour.

Recently the main efforts of Giprotsement under the program for developing the radiation-chemical technology for cement production have been directed to completing an experimental facility at Novosibirsk with a rated productivity up to 50 kg of clinker/hour, which in 1984 was accepted by the State Commission and which yielded the first hundred of kilograms of clinker.

The specialists of Yuzhgiprotsement, as a result of comprehensive research and in situ tests, have developed a sulfate-resistant slag portland cement requiring a low expenditure of electric power; it provides for the use of chemical industry slags. This bonding material is characterized by a higher resistance factor in aggressive media than other types of cement, and in contrast to the traditionally employed sulfate-resistant portland cement hardens more intensively at increased temperatures.

The new type of cement is highly economical to produce because of a lessening of the consumption of clinker. Because of this the quantity of fuel required is reduced by 30% and the cost of concrete, due to a reduction of outlays on its special protection, is reduced by 20-25%. The Prize of the USSR Council of Ministers for 1983 was awarded to a group of branch specialists for the development and introduction of sulfate-resistant slag portland cement.

A new technology for R-calcining, ensuring a decrease in the specific expenditure of heat on the calcining of clinker, an increase in the productivity of the kilning facilities and the activity of clinker, as well as the resistance of the lining in the sintering zone by a factor of 1.5-2, was introduced at the Lipetsk plant through the efforts of Yuzhgiprotsement and with participation of the Moscow Chemical Technology Institute imeni D. I. Mendeleyev.

During the post-war period a major contribution to the development of the cement industry was made by many workers, specialists and scientists. Their self-sacrificing work ensured high rates of branch development and satisfaction of the needs for cement for the restoration of destroyed cities, factories and plants, and also the construction of new facilities.

The Sebryakovsk plant became the branch leader from the time of its entry into operation (1953). The achievement of the planned capacity of the enterprise at the specified times, the high level of work and technological discipline, the innovativeness of progressive workers and engineering-technical personnel were recognized by the plant's receipt of the Order of Lenin (1966) and

also award of the titles "Enterprise of Communist Labor" (1961) and "Model Enterprise of the USSR Ministry of the Construction Materials Industry."

Great services in the successes of workers at the Sebryakovsk plant were performed by its former director, Mark Moiseyevich Smekhov, a delegate to the 22d Party Congress, holder of the Order of Lenin, the Order of the October Revolution, the Order of the Red Banner of Labor and the "Emblem of Honor," and also Petr Ivanovich Mordvintsev, initiator of multiplant servicing in the branch, recipient of the Prize of the USSR Council of Ministers, Hero of Socialist Labor, machinist of rotary kilns, as well as Vladimir Vasilyevich Kirillov, recipient of the Order of Lenin, holder of the State Prize, machinist of rotary kilns. P. I. Mordvintsev and V. V. Kirillov were elected deputies of the RSFSR Supreme Soviet.

At this plant alone 25 persons have received the Orders of Lenin and the Red Banner of Labor. Four winners of the Prize of the Council of Ministers work here, including the plant director Anton Antonovich Molodtsov, who has received the title "Meritorious Construction Worker of the RSFSR" and who has been awarded the Order of the Red Banner of Labor and the Order of "Friendship of Peoples."

The personnel of the "Akmyantsementas" production association are working stably from year to year with high work indices. The successes of the enterprise are attributable in large part to the creative work of its inventors and rationalizers, who on a regular basis contribute to the pages of our journal.

The services of Leopold Vladovich Pyatravichyus, director of the association, in the bold organization of the work of the work force have received high acclaim. He holds the Order of Lenin and has twice received the Order of the Red Banner of Labor and in 1984 was elected a deputy to the USSR Supreme Soviet.

Also working at this enterprise are A. A. Gabalis, Hero of Socialist Labor, excavator machinist, S. V. Ventskus, holder of the USSR State Prize, and A. A. Ivanauskas, holder of the Prize of the USSR Council of Ministers. S. V. Ventskus has been elected deputy to the USSR Supreme Soviet.

Twenty-three workers of the association have been awarded the Order of Lenin and the Order of the Red Banner of Labor.

Much has been done for development of the dry method for cement production in the country by personnel of the "Spassktsement" production association and by its directors: Gurgen Vlasovich Petrosyants, Hero of Socialist Labor, the present general director Vladislav Leonidovich Ivanitskiy and the chief engineer Aleksandr Bogdanovich Gentosh.

Under their direction and with active participation of Giprotsement specialists the planned productivity of kilns measuring 6.4 x 95 m was attained in a short time.

material were produced, which is 13% greater than the pre-war level and there were already 51 enterprises in operation versus 46 in 1940 (Fig. 1).

In 1962 cement production in the country was 57.3 million tons, which was 1.3 million tons more than in the United States, whereas in 1977 its production attained 127 million tons and was 16.6% of the total production of cement in the world.

Thus, after 32 years the volume of cement production in the USSR had increased by a factor of 70.6 and for the most part met the needs of construction. The mean annual increase in production of bonding material in our country was 12%, and in the United States -- 3%.

Whereas in 1940 cement for the most part was produced in the RSFSR and Ukrainian SSR, and also in small quantities in Belorussia, Latvia, Estonia, Georgia, Azerbaijan, Armenia and Uzbekistan, in 1961 its production was distributed as follows: 64.8% in the RSFSR, 17.7% in the Ukrainian SSR and 18.3% in the remaining union republics. With an increase in cement production from 1961 through 1977 by a factor of 2.5 its production in the union republics (other than the RSFSR and Ukrainian SSR) increased by a factor greater than 4.

As a result, the radius of transport of bonding material was reduced and the possibility appeared for the more rapid construction of industrial enterprises in earlier backward regions of Central Asia, Kazakhstan, Transcaucasia, Siberia and the Far East.

A distinguishing feature of development of the branch during this period was an increase in plant capacity. For example, whereas in 1940 the mean production of cement by one plant was 123,000 tons and in 1948 was 127,000 tons, in 1962 it attained 667,000 tons and in 1977 -- 1,380,000 tons, including at the enterprises of the USSR Ministry of the Construction Materials Industry -- 1,486,000 tons (Fig. 2).

The concentration of cement production was ensured as a result of the development and construction of new equipment by enterprises of the USSR Ministry of Construction, Road and Municipal Machine Building Industry, the starting up of powerful rotary kilns for the wet production method measuring 4.5 x 170 and 5 x 185 m, mills measuring 4 x 13.5 m and mills for the wet self-grinding of raw material and technological layouts for the dry method of production with rotary kilns measuring 5 x 75 and 6.4 x 95 m, supplied with heat exchangers outside the kilns.

At the present time there are 100 kilns in operation. These have a length from 170 to 230 m operating by the wet production method and there are 33 kilns operating by the dry method with heat exchangers, including 6 high-capacity plants. The principal type of kiln measures 3.6 x 150 m and in 1961 had a productivity of 25 tons/hour; in 1982 industry was supplied by kilns measuring 5 x 185 m with a productivity of 72 tons/hour (Fig. 3).

The productivity of grinding apparatus has also increased because the mills measuring 2.2 x 13 and 2.6 x 13 m were replaced by apparatus having a higher capacity -- 4 x 13.5 m.

The brigades of kiln machinists of Valeriy Anatolyevich Kuznetsov, holder of the USSR State Prize, and Boris Ilich Pipko, recipient of the Order of the October Revolution and the Order of the Red Banner of Labor, have worked actively on mastery of the new equipment.

The personnel of the Lipetsk plant, headed by Ivan Dmitriyevich Garshin, have successfully mastered the production of cement in kilns measuring 4 x 60 and 5 x 75 m. A major contribution to the mastery of the new facilities has been made by a brigade of machinists of kiln No 3, headed by V. V. Grishchuk, recipient of two Orders of Work Excellence.

Excavator operator Murad Abayev, veteran of the Great Fatherland War, holder of military awards and the Order of Lenin, has worked successfully at the Bezmeinsk plant in the Turkmen SSR since its very opening. This earlier backward plant making use of the dry method has gone to the forefront in the branch since the arrival of a new director, Fedor Matveyevich Derin, war veteran, recipient of the Order of Excellence, Level III, who for successes in production has received the Order of the Red Banner of Labor, the "Emblem of Honor" and the Order of Friendship of Peoples, as well as a prize of the USSR Council of Ministers. Persistence and stubbornness of a soldier by the head of the enterprise assisted its personnel in winning first places in the All-Union Socialist Competition of Cement Workers.

Murtakhan Beysenbayev worked on construction of the Semipalatinsk plant. Then he mastered the trade of machinist of rotary kilns and achieved high production indices, for which he was awarded the title of Hero of Socialist Labor. M. Beysenbayev was elected a delegate to the 23d Congress CPSU and the 15th Congress of the Kazakhstan CP and recently he was elected deputy to the Supreme Soviet Kazakh SSR. Murtakhan Beysenbayev is a bureau member of the Semipalatinsk Oblast Committee of the Party and secretary of the party organization in a shop in the sintering plant.

Nikolay Mikhaylovich Kazarov, war veteran, holder of the Order of Excellence, Level III, Meritorious Construction Worker of the RSFSR, works with top performance at the "Bolshevik" plant. Many years of self-sacrificing work have been given to the plant by the war veterans Viktor Vasilyevich Chibrov, Hero of Socialist Labor, and Mikhail Vasilyevich Sidnev, recipient of the Order of Lenin, who during the war years received the Order of the Red Star.

The personnel of the Korkinsk plant, headed by Vladimir Ilich Mikhaylovskiy, Meritorious Construction Worker of the RSFSR, war veteran, holder of the Order of the Red Star, the Order of the Red Banner of Labor and the "Emblem of Honor," frequently occupy first places in the All-Union Competition.

Successful work is being done by personnel of the Bezmeinsk, Belgorodsk, Korkinsk, Topkinsk, Shchurovsk and Ulyanovsk plants, the "Volsktsement" and "Yakutpromstroymaterialy" production associations, the Zhigulevsk and Ivano-Frankovsk combines, as well as the "Soyuztsemremont," "Uralspetstsemremont" and "Vostokspetstsemremont" trusts, occupying first places in achievement in the 1984 competition.

Aleksandr Leontyevich Pedan, Aleksandr Dmitriyevich Tumanov and Boris Aleksandrovich Khokhlachev, Heroes of Socialist Labor, heads of enterprises, have devoted much effort to branch development.

In summarizing the results of the post-war development of the cement industry in the country, I would like to mention to the present-day generation of cement workers the names of those who headed the branch in the 1950's and provided momentum to its development. These include Pavel Aleksandrovich Yudin, USSR Minister of the Construction Materials Industry, whose name has been given to his favorite "child," the Sebryakovsk plant, and his deputies Petr Fedotovich Lopukhov and Konstantin Vasilyevich Nikulin (see photograph on p 13) [not reproduced here].

Due to their dedication, during those years the decrees of the Central Committee CPSU and the government, determining the development of cement production for a long period, were transformed into reality and the cement machine building industry took shape as an independent branch.

In implementing the resolutions of the party congresses and the plenary sessions of the Central Committee CPSU, as well as the decrees of the Central Committee of the Party and the USSR Council of Ministers, introducing the latest advances in cement chemistry and technology, the workers at cement enterprises, scientific and planning organizations, as well as cement scientists, are ensuring the further development of production of a highly important construction material -- cement.

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BOTTLENECK IN MATERIALS SUPPLY DELAYS CEMENT PRODUCTION

Moscow STROITELNAYA GAZETA in Russian 15 Sep 85 p 1

[Article by V. Mikhaylov, professor and doctor of technical sciences, Moscow, under the rubric "Letter on an Important Topic": "It's Easier to Find Excuses"]

> A parochial attitude on the part of the workers in the Ministry of the Construction Materials Industry is preventing them from meeting the needs of the industry for self-stressing and fast-hardening cements.

Manufacturers of precast reinforced concrete are awaiting with impatience a cement that rapidly gains strength with steaming. However, the output of such a cement is poorly organized. Moreover, the Ministry of the Construction Materials Industry is raising with USSR Gosstroy the question of excluding fast-hardening and self-stressing cement from the projected production plan for 1986 and the 12th Five-Year Plan.

This proposal is prompted by the following: "From the beginning of 1983 to the present, the Podolsk Experimental Cement Plant has produced more than 4,000 tons of especially fast-hardening cement (OBTT), but only 1,200 tons of it have measured up to technical specifications. The plant is continuing to try to improve the technology in 1985, together with the All-Union Scientific and Research Institute of the Cement Industry, but so far without success." The Ministry asks for the exclusion of the plan's production target for self-stressed cement because of the alleged lack of a specific need for it and also a lack of raw materials containing aluminum (aluminous slag, ash from thermal electric power plants, etc.)

The document, signed by V. Serebrennikov, director of the Main Administration of the Cement Industry, is in fact an unworthy attempt to misinform USSR Gosstroy. I am not referring to minor errors such as when fluorinated cement is included with the self-stressed cements. The document's main point is without foundation in fact. The so-called production "secret" of manufacturing both self-stressed and fast-hardening cement is well known already to six plants in the industry. The sole distinction between the varieties already developed and those yet to be developed is that production of the new ones depends not on slag but on material containing aluminates. It's cheap, and there is a lot of it in the country.

For example, a mixture of cheap limestone and alunite rock (3 rubles 50 kopecks per ton), when fired to only 1250-1330 degrees (portland cement requires 1450 degrees), with the addition of a small amount of gypsum in the milling, yields a fast-hardening, sulfated, self-stressed cement, SNT, which sets very quickly. This characteristic manifests itself with particular strength in steaming, a process which is just right for reinforced concrete plants. In 1983 the All-Union Scientific Research Institute of the Cement Industry was tasked by the Scientific Research Institute of Concrete and Reinforced Concrete to manufacture a sulfated, self-stressed cement as follows: 72 parts limestone, 28 parts alunite rock (with 2 percent gypsum). During steaming, which took no more than 4 hours, the concrete acquired a strength of 217 kg/cm^2 (65 percent of the 28-day strength). All this confirms that manufacturing such a cement is simpler than portland cement, if only because it requires significantly less fuel to produce. Many of the problems in cement production would be done away with by converting to the output of self-stressed and fast-hardening cements. In a word, the benefits aren't difficult to imagine.

The allusion to the absence of the aluminum-containing materials for producing self-stressed cement is groundless. In the first place, ash from thermal electric power plants is dumped in immense quantities; in the second place, rich alunite deposits are available in the Transcaucasus, the Transcarpathian region, and Central Asia. The Caucasus for many years has not been suitable for aluminum production, and low aluminate ores are going to waste.

The Ministry of the Construction Industry in Georgia was tasked with organizing industrial research production of SNT at the cement plant in Rustavi during the second and third quarters of 1984. For more than a year, however, alunite has been lying around the plant like rubbish. The USSR Ministry of Nonferrous Metallurgy guarantees deliveries of this material on demand. Where is the shortage?

The alleged lack of a specific demand for self-stressed cement is also without foundation. Its users were clearly identified in 1983. Records to prove it are available.

Since the startup of production of a new type of self-stressed cement, NT-10, which compensates for shrinkage, the group of its users has considerably expanded. This material costs about 16 rubles a ton -- it is significantly cheaper than portland cement. And it can be used extensively in the manufacture of any kind of reinforced concrete.

I want to emphasize the positive characteristics of NT-10: high strength, quick hardening with steaming, waterproofness, and a guarantee against contraction cracks. The national construction materials industry bears responsibility for meeting the demands of builders for this effective material in the shortest possible time.

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